Medical Library
FEB 1 1945

BRITISH MEDICAL JOURNAL

JOURNAL OF THE BRITISH MEDICAL ASSOCIATION

SATURDAY JANUARY 13 1945

TABLE OF CONTENTS

Evolution of Modern Therapeutics Sir WALTER LANGDON-BROWN, M.D. 35
Scabies Prophylaxis with "Tetmosol" Soap KENNETH MELLANBY, SC.D. 38
Artificial Insemination MARY BARTON, M.B., KENNETH WALKER, F.R.C.S., and B. P. WIESNER, D.SC. ..40
Methyl Bromide Poisoning: Nervous Effects A. BARHAM CARTER, M.D. 43
Hypoproteinaemia during Recovery from Severe Anaemia TREVOR DAVIES, M.R.C.S. ..45
Sight-saving Classes N. BISHOP HARMAN, F.R.C.S. 53

MEDICAL MEMORANDA

Gastric Drip Infusion to Combat Dehydration in Infants. F. M. B. ALLEN, M.D., and W. H. RUTHERFORD, M.B. 46
Urinary Retention in an Infant caused by Malignant Growth. PHILIP H. MERLIN, F.R.C.S.Ed. 46

GENERAL ARTICLES AND NEWS

New Bridge-heads for the Attack on Cancer 54
Nova et Vetera: Anniversary of Death of Van Helmont 59
Medico-Legal 62
Electrode for Retinal Detachment Operation. T. C. SUMMERS, F.R.C.S. 48
NEW YEAR HONOURS (*concluded*) 55
ASSOCIATION OF VOLUNTARY TEACHING HOSPITALS 55
THE SERVICES 65
MEDICAL NOTES IN PARLIAMENT 64
MEDICAL NEWS 65

REVIEWS

American Medicine 47
Venereal Diseases 47
Human Conflicts 47
Notes on Books 48

OBITUARY

M. J. Nolan, L.R.C.P.&S.I. 63
Ernest Worley, M.R.C.S. 63
T. H. Davies, M.R.C.S. 64
G. A. Dawson, M.D., D.P.H. 64
H. D. Pickles, M.R.C.S. 64
J. G. Macaskie, L.R.C.P.&S. 64
J. J. O'Mullane, M.B. 64
Gustav Singer, M.D. 64

LEADING ARTICLES

Local Government Boundaries 49
Chemoprophylaxis of Respiratory Infections 50

ANNOTATIONS

Treatment of Wound Shock 51
Tension in Tuberculous Cavities 52
Herpes Zoster 52
"A House of Books" 52

LETTERS AND ANSWERS

Severe Seborrhoea—Allergy to Milk—Effects of Sexual Continence—Adrenaline Injections—Coarse Tremor in the Elderly—Late Walking—Infections in Pregnancy—Diagnosis of Coronary Thrombosis—? Fröhlich's Syndrome—About Sulphonamides—Progesterone for Sterility and Abortion—Pityriasis Rubra—Cerebral Thrombosis—Action of Ethylene Diamine—Pyknolepsy—Income Tax—Rocking Movements in Sleep—Translation, Please—Hyoscine for Sea-sickness—Oxalated Blood for Cell Counts—Rectal Examination during Labour—Regional Ileitis—Headache and "Acute Abdomen"—Injuries to Supra-orbital Nerve—Cracked Fingers—Correction 67–70

SUPPLEMENT

L.C.C. and National Health Service 5
Medical Services in Norway 6
A Comprehensive Health Service: Proposals from Bristol 7
CORRESPONDENCE 7

CORRESPONDENCE

Nursing and Tuberculosis. ESTHER CARLING, M.D. 59
Mass Radiography. R. GRENVILLE-MATHERS, M.B. 59
Tuberculosis in Kent. BRIAN KIRMAN, M.D. 60
Immediate Repair of Cervix. M. REDDINGTON, F.R.C.S. 60
High-fat Diet in Diabetes. R. L. BISHTON, M.B. 60
Hypopyon Ulcer. R. A. D. CRAWFORD, M.B. 60
Acute Retrocaecal Appendicitis. S. MUNTARBHORN, M.B. 61
Surgical Shock in Epileptic. H. HAXTON, F.R.C.S. 61
Brachial Radiculitis Improving after Malaria. J. R. EDGE, M.B. 61
Food Yeast and Artificial Milk. G. ARBOUR STEPHENS, M.D. 61
Aetiology of Erythema Nodosum. H. S. STANNUS, M.D. 61
Multiple-pressure Vaccination. H. J. PARISH, M.D. 62
Scabies. W. F. CORFIELD, M.D. 62
Medical Demobilization 62
Artificial Insemination. T. C. CLARE, F.R.C.S. 62
The Death of Burns. A. OGG, M.D. 62

REPORTS OF SOCIETIES

BRITISH ORTHOPAEDIC ASSOCIATION: Changes in Muscle after Injury 56
ROYAL SOCIETY OF MEDICINE: Medical and Veterinary Education 57

Epidemiology Section 66

BRITISH MEDICAL ASSOCIATION, TAVISTOCK SQUARE, LONDON, W.C.1

No. 4384, WEEKLY, PRICE 1/6

Copyright

REGISTERED AS A NEWSPAPER

Chemotherapy
WITH 'ALBUCID'
IN THE COMMON COLD

It is generally held that the common cold is due to infection by a virus against which no chemotherapeutic measures have so far been found to be effective.
In the very distressing secondary infections, however, sulphonamides have been employed with varying success. Outstanding in this series is 'Albucid' Soluble, which is freely water-soluble. The low surface tension in which it is presented in

'ALBUCID' SOLUBLE
NASO-PHARYNGEAL SOLUTION

renders this preparation most effective whether in prophylaxis or treatment. Dispersal over the mucous membrane is rapid, penetration is marked, and it can be sprayed or painted on without causing irritation. Non-toxic—it is indicated in the mixed infections of coryza, tonsillitis, laryngitis, œsophagitis, etc.

Descriptive literature sent on request.

'Albucid' is the registered name which distinguishes sulphacetamide of British Schering manufacture.

BRITISH SCHERING LIMITED
185-198, High Holborn London, W.C.1

S.47

OF PROVEN MERIT
"WANDER" BRAND
Malt Extract & Cod Liver Oil

THE therapeutic qualities and effectiveness of "Wander" Brand Malt Extract and Cod Liver Oil have been demonstrated by practical experience over many years. It is a preparation of outstanding pharmaceutical excellence.

The cod liver oil used is the best obtainable and the malt extract is specially prepared by the manufacturers, A. Wander, Ltd., who are probably the world's largest producers of medicinal malt extract, upon the manufacture of which there are no greater authorities.

The makers have also specialised for many years in the combination of malt extract and cod liver oil, and the proportions of these two ingredients which are combined in "Wander" Brand are those most generally required by the medical profession.

Thus "Wander" Brand Malt Extract and Cod Liver Oil is a product on which the physician can rely confidently, knowing that it cannot be surpassed.

A. WANDER LTD., *Manufacturing Chemists,*
5 and 7. Albert Hall Mansions, London, S.W.7.
M308

Gastric derangement, accompanied by nausea and vomiting, may on occasions interfere seriously with the valuable medication provided by Stilboestrol therapy.

Where intolerance is experienced, a compatible gastric sedative will be found in 'BISoDoL' Powder. This well-balanced antacid-digestant —with its peptonising and amylolytic agents— helps to combat any anorexia.

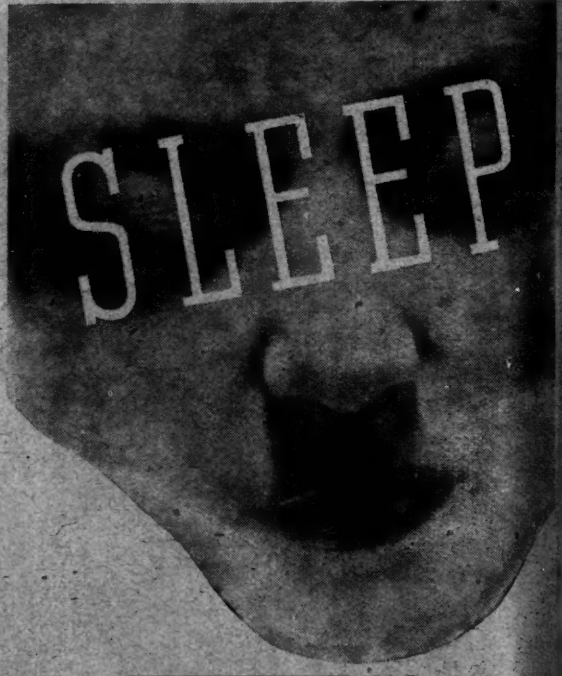
Composed of bismuth subnitrate, magnesium carbonate, sodium bicarbonate, papain, diastase and peppermint oil, 'BiSoDoL' will be found to be an ideal alkaline sedative.

DOSAGE: One teaspoonful to be given shortly before each dose of Stilboestrol. This dose may be safely increased where acute nausea is marked.

FORMULA: Magnesii carbonatis levis, 39.27. Sodii bicarbonatis, 56.09. Bismuthi subnitratis, papaini, diastasi, aa 1.40. Olei menthae piperitae, 0.44.

BiSoDoL

BiSoDoL LIMITED, 12, CHENIES STREET, LONDON, W.C.1



CADBURYS
BOURN-VITA

BRITISH MEDICAL JOURNAL

LONDON SATURDAY JANUARY 13 1945

THE EVOLUTION OF MODERN THERAPEUTICS*

BY

Sir W. LANGDON-BROWN, M.D., Hon.D.Sc., F.R.C.P.

Emeritus Professor of Physic in the University of Cambridge

It is not only quite logical that treatment should come last in a textbook description of diseases; it also follows the historical sequence of our knowledge. Fifty years ago it must be admitted that this section was very summarily dealt with, often consisting merely of vague statements. Nor is this surprising, when we were taught that in treatment "the first thing is diagnosis, the second diagnosis, and the third diagnosis." We should agree that the first thing is diagnosis, but if treatment stops there we should rightly find a dissatisfied patient.

Let me go back very briefly to the beginning. In Ancient Greece we find two cults side by side: the Aesculapian, with its methods of psychotherapy and suggestion; the Hippocratic, observational but dominated by the doctrine of the four humours—not much stress on medicines, though Hippocrates prescribed ox liver for anaemia. But both cults laid great emphasis on cleanliness, fresh air, attractive surroundings, and, where practicable, exercises. Galen placed much more reliance on drugs, as we are reminded by the persistence of the term "galenicals" in pharmacy. He carried the doctrine of humours to the point of saying that if, for instance, the patient was hot and wet, the appropriate treatment was cold and dry, thereby showing himself more of an "allopath" than the homoeopaths declare us to be.

After Galen comes the crash, and any attempt at medical science virtually vanishes from Europe. The reason is clear: in the Roman Empire, which was synonymous with the civilized world, physicians came to be treated as slaves, and medicine can flourish only in an atmosphere of freedom. Hippocratic medicine, it is true, flickered still at Salerno; for the rest, it was just kept alive by the Arabs. Otherwise there was a reversion to magic and witchcraft, with no real advance for more than a thousand years. True, a number of useful drugs derive from witchcraft and folklore, such as belladonna, hyoscyamus, aconite, valerian, cinchona, and digitalis.

The Beginnings of Scientific Medicine

Scientific medicine begins with the Renaissance—with the anatomy of Vesalius, the experimental methods of Gilbert, the physiology of Harvey, and the morbid anatomy of Malpighi. But their application to clinical medicine could scarcely be made effective while chemistry remained in such a confused and elementary condition. The crude attempts of the iatrochemists, such as Sylvius, came to very little. Meanwhile observational clinical methods made advance under Glisson, Willis, and Sydenham. Yet treatment could hardly advance until a more scientific study of drugs was made in the middle of the 18th century by William Heberden, who lectured on materia medica at St. John's College for ten years and did his best to found a rational pharmacology.

Still, it remains true, as Sir Francis Fraser says, that the beginning of the 19th century found treatment much the same as 1,500 years previously. The fundamental idea of disease as something added to the body, which had to be got rid of, still ruled the practice of therapeutics, which was therefore largely of an eliminative character—emetics, purgatives, diuretics, diaphoretics, and bleeding. As a better appreciation of the complex changes in disease developed, doubts gradually arose as to the wisdom of such heroic efforts to expel the disease from the body. It is not fanciful to see in this idea of expulsion an unconscious persistence of the more primitive idea of disease as due to demoniacal possession or influence.

With the 19th century came new methods of diagnosis—auscultation and percussion—which certainly made medicine more scientific. This led to a close comparison between the physical signs detected during life and the lesions revealed post mortem. In this way a solid body of knowledge was built up, but it led to some neglect of therapeutics by diverting attention from the beginnings of disease to its end-results, which produced a nihilistic attitude towards treatment by drugs. A rather comic sidelight is thrown on this aspect, that when I became medical registrar at Bart's the post-mortem book was still labelled "Register of Complete Cases." There you have it: no case complete until the necropsy is reached! Meanwhile anaesthetics and antiseptics were enabling surgery to shoot ahead.

It was not until the last quarter of the 19th century that therapeutics began to take a new course. Although salicylate had been synthesized for commercial purposes in 1874, the first synthetic preparation used clinically was antipyrine, or phenazone as it is now more usually called, which was prepared in 1883 by Filehne, whom I remember when he came here a few years later to work at antipyretics. The name "phenazone" has the advantage of reminding us that it, like salicylate, is a phenol derivative and therefore contains a benzene ring. It is very interesting to observe this in the earliest artificial products designed to influence metabolism, for a good many years were to elapse before it was found that a benzene ring or rings were an essential basis for products formed by the body to regulate its own metabolism. Thus adrenaline contains one such ring and thyroxine two, while the sex hormones and vitamin D contain four, condensed into the so-called phenanthrene ring.

The Biological Approach

The last decade of the 19th century saw yet a newer approach in therapeutics—the biological one, as seen in immunology and endocrinology. G. R. Murray introduced thyroid therapy in 1891, and active extracts of the adrenals and pituitary followed within the next few years. Hitherto the ductless glands had been regarded as excretory in character, the elimination theory cropping up again in a new guise. The bloated aspect of the myxoedematous patient might well suggest this; but Addison's disease was regarded as a failure on the part of the adrenals—anatomically so close to the kidneys—to detoxicate the body, until Sir Humphry Rolleston in his Goulstonian Lectures for 1895 adduced the evidence of its being an "atony" due to the loss of an internal secretion, the existence of which he predicted. And even quite recently hyperparathyroidism was attributed to a failure to eliminate guanidine. However, the conception of internal secretion, hitherto vaguely and fitfully held, was firmly established by Starling's hormone theory, which he put forward in his Croonian Lectures for 1905. This, by showing that the body prepared active chemical substances for its own use, had a marked influence in restoring

* A presidential address to the Cambridge Medical Society.

belief in the efficacy of drugs to influence its reactions. But no wave of advance is without a backwash, and the early triumphs of thyroid therapy misled us into thinking the problem simpler than it has proved to be. Moreover, a new polypharmacy arose, and I have seen prescriptions of an extraordinary conglomeration of animal extracts, quite unrelated to any evidence of their activity. Such abuses were a partial justification for Swale Vincent's sweeping declaration that organotherapy was administration of extracts of unknown value to a credulous patient by a still more credulous physician! Fortunately a more scientific attitude prevails to-day, and we have also learned not only that endocrines can influence the nervous system but that the converse is also true.

The other great advance in biological therapeutics—immunology—was, of course, an extension of the old empirical treatment of smallpox, first by inoculation and then by vaccination. The bacterial conception of disease gave a great impetus to research on these lines. Pasteur's work on rabies was the first scientific approach, but 1892 saw the early triumph of diphtheria antitoxin, and I recall with interest that two years later I was clinical clerk to the first patient to be treated by it in this country. You will not expect me to deal with the niceties of active and passive immunity. It would generally be agreed now that the passive immunity conferred by sera is suitable for acute diseases, while active immunity achieved by vaccines is principally useful in prophylaxis. Vaccines for established disease have, on the whole, proved disappointing, and I expect that most of my hearers find they are using them much less than 10 to 20 years ago. Routine inoculation by normal intestinal flora is, I hope, discarded: after all, it is a poor bowel that can't grow anything! In parenthesis it is an entertaining illustration of the changed point of view to read again Bernard Shaw's *Doctor Dilemma*; its contempt for clinical medicine and its emphasis on the marvels of opsonins read strangely to-day; for whoever hears of opsonins now? Nothing becomes out of date so quickly as the very up-to-date. Conclusions in clinical observations are difficult to reach, but, once achieved, they have a way of persisting. Thus in my professional lifetime the laboratory has given three different interpretations of Addison's disease, but no one has surpassed his clinical description of it.

Recognition of Deficiency Diseases

But to resume my main thesis: immunology and endocrinology had as their underlying principle the application of Nature's methods so far as was possible. The next step, for which we had to wait until the 20th century, was the recognition of deficiency diseases—the realization that, as it were, a minus could cause a disease as well as a plus. Not only has their study given us new therapeutical weapons, but it has given us new insight into the chemistry of the cell, which employs vitamins as powerful and essential catalytic agents. Endogenous catalytic agents we had recognized, and Garrod traced most inborn errors of metabolism to a congenital absence of one or another such agent. But here were exogenous catalysts; acquired needs as the biochemistry of the body became increasingly complex. As an example let me take R. A. Peters's work on vitamin B_1. Of all tissues in the body the brain cells are most sensitive to oxygen lack, and this intracellular oxygen is supplied by dextrose. If an overdose of insulin has locked up too much of this for the metabolic needs of the moment the patient is convulsed and then becomes unconscious. This we knew; but Peters showed that vitamin B_1—aneurin—is necessary to the breakdown of dextrose so that its oxygen is presented in a suitable form for the brain cell to accept.

We owe, indeed, a great debt to the biochemist and the organic chemist. The latter has provided us with an enormous number of synthetic remedies, while, linked with the biochemist, he not only has unravelled the complexity of, for instance, the structure of the sex hormones, but has actually produced artificially substances of a simpler constitution and yet more potent than the natural ones. If you ask why did not Nature make them, the answer is ready to hand. The natural product has to be prepared within rigid limits of temperature and *p*H. The laboratory methods would often be fatal to the survival of the cell.

The Action of Drugs: A New Conception

I now come to a line of work which seems to me to have introduced a new conception of the action of drugs and has led to a new generalization: that every nervous stimulus to the tissues is mediated through a chemical reaction. The outline of the history of these researches is interesting. In 1901, soon after the isolation of adrenaline, Langley pointed out that its effect on any tissues was the same as if the sympathetic nerve to that part had been stimulated; but the enormous significance of this observation was not realized for some years. In 1906 Langley and T. R. Elliott independently found it necessary to postulate the existence of a receptive substance between the nerve ending and the tissue supplied. It had long been known that in many instances atropine would block the passage of a nervous impulse, while pilocarpine or physostigmine would facilitate its passage and increase the response. Thanks to Dale and to Loewi, these observations were combined and extended to reach a striking conclusion. It was found that when a sympathetic nerve was stimulated adrenaline was liberated at the post-ganglionic nerve ending. This explains Langley's observation and enables us to realize that the adrenal medulla contains an emergency store of adrenaline to motivate widespread sympathetic effects when necessary. The other nerve endings of the nervous system liberate acetylcholine, which activates the appropriate tissue. Thus we can divide the nerve endings into adrenergic and cholinergic, according as they liberate adrenaline or acetylcholine.

Now when atropine paralyses the vagus, for example, it does so by preventing acetylcholine from getting into the receptive substance, though just as much of it is produced as before; and when physostigmine—or eserine, as it is more usually called—prolongs or intensifies the effect of parasympathetic stimulation it does so by preventing the destruction of the acetylcholine set free. The pharmacology of the future will have to study the natural history of these receptive substances and find out in what way they can be helped by drugs, both positively by facilitating their reactions, and negatively by blocking the way against the entrance of toxins.

Attempts to utilize acetylcholine therapeutically have been disappointing and have led to a search for more satisfactory synthetic substitutes. By varying their composition it might also be possible to produce more selective reactions. Of such doryl—otherwise known as carbachol—and mecholin are examples which have met with some limited success. On the adrenergic side ephedrine and benzedrine are familiar examples of drugs which imitate sympathetic action, though there are several other examples that have hardly come as yet into general use. We are getting to know more about their absorption and fate in the body, and in future more uses for them may be found.

Turning to the other side of such reactions, we find, for instance, in eumydrine and prostigmin synthetic drugs which have a more selective action than their native congeners in blocking or facilitating the action of acetylcholine. Eumydrine, which is the methyl nitrate of atropine, is particularly useful in relaxing pyloric spasm. Like physostigmine, prostigmin prevents destruction of acetylcholine at the end-plate, but for a much longer period. Dr. Mary Walker introduced its use in myasthenia gravis, which we may now attribute to some toxic substance—produced by a diseased or, at any rate, an enlarged thymus—which has a curare-like effect in blocking the end-plate between nerve and muscle. The clearing up of this point has naturally encouraged surgeons to treat myasthenia gravis by thymectomy, and Geoffrey Keynes has performed the operation 28 times. The results are variable but in some cases very successful, though the ultimate elimination of the toxin may not be effected even for several months after operation. It is an interesting example of the biochemist indicating the scientific basis to justify the intervention of the surgeon.

We see, then, that drugs may help or bar the entrance of stimuli into the cell. Another way in which they may have this effect is by adsorption on to the cell envelope: thus the barbiturates oppose the entrance of thyroxine, and it is interesting to recall that practitioners were using them empirically before this action was known. A much more selective action

against thyroxine is provided by the new drug thiouracil, but its therapeutic effects are still on trial. Its discovery has, however, called attention to other selective actions against endocrines, such as alloxan against insulin and the temporarily sterilizing effect of sulphapyridine in males, while thallium salts appear to be specific against the whole endocrine system. The only therapeutic value in these latter substances is the possible treatment by alloxan of spontaneous hypoglycaemia from hyperinsulinism.

Chemotherapy

The last great advance, chemotherapy, is so much in the news to-day that I need refer only to certain general principles involved. When, in 1907, Ehrlich put forward his theory of side chains, haptophores, and amboceptors to account for the formation of antitoxins, it was, after a preliminary welcome, rather discounted as the kind of thing a German would evolve out of his own inner consciousness. Yet it contained a germ which very soon grew into chemotherapy, for there was the idea of a chemical substance attaching itself to some link in the invading microbe and thus completely sterilizing it. Salvarsan was the result, and, although it has not fulfilled the expectation of its discoverer that it would cure syphilis in one dose, it has proved to be the greatest advance in the treatment of that disease. Ehrlich, as we know, was profoundly interested in dyes, and it was the *intra-vitam* selective staining by methylene blue which gave him the original idea. This is doubly interesting, since it was the dye industry which gave us sulphonamide. This substance was synthesized in 1908 and employed to increase the fastness of dyes. It was thought that this quality was due to the union of the substance with the protein cells of the wool. Although in 1919 some of such dyes were noted to be bactericidal, no clinical application of this observation was begun till 1930, when prontosil was reported upon favourably in the treatment of erysipelas and Domagk came to the conclusion that it had no effect *in vitro* but acted only in living tissues. Later work shows that the action of the sulphonamides must be regarded not as bactericidal but as bacteriostatic, holding the growth of bacteria up until the natural defences of the body could come into action. We now know more of the way in which this is accomplished, for it has been shown that sulphonamides successfully compete with *p*-animobenzoic acid for the favours of the cell, and thus literally starve the bacteria into surrender if present in sufficient concentration.

I have pointed out that since the 'nineties the trend of therapeutics had been towards applying Nature's own methods, and chemotherapy at first appeared a diversion in an entirely different direction. Now it is seen that sulphonamides act, as one may say, biologically, producing a deficiency disease in bacteria. In a sense earlier observations on salvarsan pointed to a similar conclusion, for just as the body can be educated by small doses of a toxin to resist larger doses, so the *Spirochaeta pallida* can become resistant to bigger doses of salvarsan if first given inadequate ones.

The multiplication of sulphonamide derivatives goes on apace, and already sulphapyridine has been displaced as first favourite, even against the pneumococcus, by sulphadiazine and sulphathiazole. I need not go into details beyond mentioning that, clearly, when a local action is required the less soluble forms are preferable; thus for dysentery sulphaguanidine is the drug of election.

The sulphonamides are not the only drugs to show bacteriostatic powers: gramicidin, for instance, is a crystalline polypeptide intensely toxic to pneumococci and haemolytic streptococci. The underlying principle is the same: to attach linkages to the main agent in such a way as to diminish its toxic and to increase its therapeutic effect. Thus salvarsan contains enough arsenic to be violently toxic if it had not been linked with certain organic groups. We have an instance of this in a drug which does not come within the present definition of chemotherapy; I mean salyrgan or, to give it the official name, mersalyl. It has long been known that mercury is toxic to the convoluted tubules of the kidney, and if given in sufficient strength can necrose them. Yet its organic compound mersalyl is used as a diuretic. Apparently it does so by throwing the absorptive power of the tubules out of action while allowing filtration to go on unhindered, with the result that a large quantity of dilute urine is passed. The toxic action of mercury has been greatly reduced, but it must be observed that it is still acting in a mild and selective way against the efficiency of the tubules to concentrate, and is thus a risky diuretic in kidney diseases.

The aim in chemotherapy may be said to be achieved when the toxic action of the drug is practically *nil* and its therapeutic effect is at the maximum. It is easy to prepare an antiseptic strong enough to destroy bacteria, but the tissues of the host would be damaged to a varying extent. Penicillin seems to have achieved the desired end of bacteriostasis without any such toxicity. It is only one of a whole series of such agents elaborated by micro-organisms and fungi, but is so far the best and most easily handled. By this time we have become familiarized with both its successes and its limitations. We know that its antibiotic power can be exercised in dilutions of one part in a million, and in its pure form even one in 50 millions. Like other chemotherapeutic agents, it differs from antiseptics in that it selectively attacks the organism causing the disease without doing serious injury to the tissues. We can now realize that, in malaria, quinine acts in exactly the way of a chemotherapeutic agent.

The discovery of penicillin by Fleming illustrates Pasteur's dictum that chance enters only the mind that is prepared. Many people, including Pasteur himself, must have seen their culture plates contaminated by moulds, but only Fleming saw the significance of the sterile ring surrounding the spot of contamination. However, just as it required Best to turn Banting's discovery of insulin to practical purposes, so have Florey's researches achieved this for Fleming's discovery.

The Endocrine Orchestra

To turn to an entirely different development of therapeutics: 12 years ago I delivered myself of the statement that the pituitary was the leader of the endocrine orchestra—a statement frequently repeated since. To-day I would add: and the hypothalamus is the conductor, for in the interval it has become clearer that the endocrine system is much more influenced by the nervous centres for emotional expression in the hypothalamus than was recognized 12 years ago. For an important part of this knowledge we are indebted to the anatomists. My analogy fails at one point, for in some ways the hypothalamus and the anterior pituitary form one unit, and diabetes insipidus, for instance, may result from a disorder of any part of it. But, changing the metaphor, we have in the pituitary a great transformer of nervous into chemical activity, which in its turn stimulates or inhibits other ductless glands by the appropriate trophic hormone. The hypothalamus in its turn receives impulses from the cortex, so that the psychic state can play on the endocrines through the pituitary, just as the endocrines can modify the psychic state. One has only to think of the influence of hyperthyroidism or hypogonadism to realize that. It is not a one-way traffic between cortex, hypothalamus, and endocrines. This conception has greatly added to the interest in the treatment of mental states by physical means, which well accords with the prevalent psychosomatic view of disease in general. So the benefit of insulin-produced convulsions—accidentally discovered, I believe—fitted into the picture. Originally used for schizophrenia, they were soon replaced by electrically induced convulsions. The present view, I gather, is that insulin is still to be preferred for schizophrenia, but electricity for autonomous depression. The success of the latter is undoubted, but of the former more variable. And the electric method has far fewer unpleasant side-effects. It is difficult to see how the benefit is conferred, but it looks as if the violent convulsions may break down some resistances between association cells. Now that the surgeon is taking a hand and performing leucotomy, and is claiming successes, it would certainly appear that *something* at any rate is broken down. It is not surprising to learn that leucotomy is sometimes followed by a lack of initiative and tact, though intelligence and artistic capacity are claimed on occasion to be actually increased. It has been stated that the fundamental change is a diminution of self-consciousness, as if a pathological point in the cortex had been cut off from its mental connexions. To me it seems a desperate remedy, to be reserved for desperate cases.

Other physical methods in the treatment of psychoneuroses and psychoses include continued narcosis and partial loss of consciousness under light anaesthesia. The latter procedure is used for recovery of buried memories by hypnotic suggestion during the recovery period.

Psychological Aspects of Disease

But such methods are for the severest types of cases. The point which concerns all of us is the striking change from the materialistic outlook prevalent in my student days to the modern recognition of the psychological aspects of disease. On this let me quote Sir Francis Fraser, himself trained in the strictest sect of organic medicine. Speaking of the criticism that the medical schools give too scientific a training and send men out knowing next to nothing of the care of patients or of the personal side of practice, he says: "I am sure it is a just criticism, but maintain that hospital practice is not 'too scientific'—it is not sufficiently scientific. . . . Treatment based on the deduction that one patient's inefficiency is due to family troubles is just as scientific as that based on *x*-ray evidence of duodenal ulcer in another patient. To say 'there is nothing the matter' because the physical examination, *x*-ray evidence, and laboratory tests fail to disclose a cause of the trouble is, on the other hand, unscientific. If there was more exact knowledge of how the material and mental surroundings of our patients affect their functions and activities . . . clinical instruction would more nearly meet the needs of private practice, and it would be more scientific, not less."

This was written 10 years ago, and I am sure that the author would admit that since then it has been shown that the psychological factor plays a considerable part in the causation even of the organic lesion he selects—duodenal ulcer. And so the latest phase in the evolution of modern therapeutics is recognition of the psychosomatic factors in disease—thereby in a way completing the circle by a return to Aesculapius.

Discarded Methods

The path of this progress is littered on either side by discarded theories and practices. It is a chastening experience to turn over one's old case records. One suddenly realizes that some formerly favourite treatment has been completely forgotten. My belief is that we practise continually an almost unconscious revision, and in this way a consensus of opinion is reached: no one has openly attacked the treatment, perhaps—it has just passed silently into oblivion. And I suspect that a scrutiny of past literature from manufacturing firms would show that they have found it advisable to cease making a good many formerly vaunted remedies.

On this matter Trousseau's advice to his students remains as true as on the day when it was spoken: "Always use the new remedies while they still have power to heal." How is it that people were formerly cured by Bulgarian soured milk or by Bulgarian belladonna and are no longer? How is it that the routine use of vaccines therapeutically is fading out while their prophylactic use is increasing? One could quote many such examples. I think that admirable clinician the late T. A. Ross supplied the explanation. He noted that his experience of the result of the Weir Mitchell treatment fell into three periods. In the first the results were excellent and in the second variable; the third group was a failure. Then he realized that in the first he himself firmly believed in the method, in the second he had come to doubt it, while in the third he had ceased to believe in it and used it only at the request of others. I had the opportunity of studying Sir Lauder Brunton's methods fairly closely nearly 50 years ago. I attributed his undoubted therapeutic successes to two things—he had a genuine and deep sympathy for human suffering, and he always felt sure that he knew the precise remedy—preferably a new one from Germany—which would exactly suit the individual patient.

Conclusion

Well, I hope I have been able to show that gradually and by painstaking effort the profession has come into possession of a much larger number of well-attested remedies than formerly, in which we can have enough confidence ourselves justifiably to inspire confidence in our patients. We have a much clearer view of the fundamental principles of therapeutics, and the present position is full of promise for the future, for the last 40 years have shown greater advance than all the preceding centuries. We have passed away from the ancient mixture of empiricism and magic, by way of pharmacology, to a biological and indeed a biochemical approach. The tree of healing can now draw sustenance from many roots. In its present state it is still a young growth; let us see to it that its development is healthy, strong, pruned, and, above all things, honest.

SCABIES PROPHYLAXIS USING "TETMOSOL" SOAP

BY

KENNETH MELLANBY, Sc.D.

Recently I described (Mellanby, 1944a) some experiments in which attempts were made to control scabies infection. Except where therapeutic treatment with benzyl benzoate was given to all members of a closed community the results were disappointing. Since that paper was written a new method of some promise has been described (Davey *et al.*, 1944; Gordon *et al.*, 1944), and the present article describes a further prophylactic trial.

Prof. R. M. Gordon and his colleagues, in conjunction with Imperial Chemicals (Pharmaceuticals) Ltd. and Unilever Ltd., have produced a soap with good cosmetic properties which contains 10% of "tetmosol" (i.e., tetraethylthiuram monosulphide). The use of this soap has been shown to kill *Sarcoptes* and thus to cure scabies, though as a therapeutic agent at a treatment centre it is less efficient than benzyl benzoate. It is, however, so simple to use that it seemed possible that its general issue to an infected population would prevent further transmission of the disease. Whereas these authors described the therapeutic effect of tetmosol soap, they expressed the belief that its greatest value would be found in its use as a prophylactic against scabies—a property which they had already proved in the case of animals.

For a satisfactory test of the prophylactic value of tetmosol soap it was necessary to have a population showing a high incidence of scabies and to ensure that the soap was used by all individuals. Furthermore, facilities must be available for examining all subjects before and after the period during which the soap was used, in order to assess the effect on the incidence of scabies. Such conditions were found in a large mental hospital. Scabies was endemic among the patients; and the staff, having had many difficulties in combating the disease, were only too willing to co-operate in an experiment which might alleviate the position. To assess the amount of scabies present before, during, and after the experiment would obviously take a great many hours of skilled examination, but fortunately I had available at the Sorby Research Institute sufficient trained staff to make this practicable.

These facilities being available, I wished to place them at the disposal of Prof. Gordon. He decided, however, that he would prefer me to take the responsibility for the experiment, though he placed his advice at my disposal and also helped with the experiment in a number of ways.

Procedure

Before the experiment started every patient in the hospital was inspected; tetmosol soap was then supplied to approximately half of them. The details of the experiment were explained to the hospital staff, but nothing was said to the patients, who simply accepted the soap provided (it was rather pleasanter to use than that ordinarily available). All other treatment of scabies, whether in the control or in the experimental group, was discontinued for the 11 weeks of the trial.

Examination of the patients was carried out by volunteers from the Sorby Research Institute; these men had themselves had prolonged experimental infections with scabies, and were fully familiar with finding and removing acari. The examinations were all made under the supervision of Mr. W. C. Bartley. During the initial examinations I also was present, and during

the latter part of the experiment Prof. Gordon and his colleagues visited the hospital on a number of occasions. The hands and wrists of all patients were carefully scrutinized, and any suspicious lesion was examined with a lens. Whenever any signs suggesting scabies were noticed but when no mites were found on the hands and wrists, the elbows were examined. A patient was said to have scabies only when a *live* mite was removed and demonstrated.

Results of the Experiment

The results of the examinations, before and after the use of tetmosol soap, are included in the accompanying Table.

Table showing the Therapeutic and Prophylactic Effects of the Use of 10% Tetmosol Soap and of Unmedicated Soap over a Period of 11 Weeks on the Incidence of Scabies in an Infected Community

Treatment	Total Patients	Observation Periods								
		Start of Experiment			After Six Weeks			After Eleven Weeks		
		Total Infected	Per cent. Infected	New Cases	Total Infected	Per cent. Infected	New Cases	Total Infected	Per cent. Infected	New Cases
Tetmosol soap 10%	705	93	13·2	—	9	1·3	—	9	1·3	—
Unmedicated soap	1,213	18	1·5	—	26	2·1	8	42	3·5	24

(*a*) *Preliminary Examination.*—Scabies was found to be much more common among the female than among the male patients; this agrees with the previous investigation (Mellanby, 1944b). Of the 1,101 women 106 (9.6%) had scabies; while an additional 41 (3.7%) showed some clinical signs of the disease but no live acari could be found—these cases were therefore omitted. The female patients lived in two separate blocks and in an admission hospital. For ease of administration and to ensure that only the right persons used the prescribed type of soap, one block containing 660 patients, of whom 89 (13.5%) had scabies, was issued with tetmosol soap for each individual, while the admission hospital and another block which contained 441 patients, of whom 17 (3.9%) had scabies, continued as before the experiment. The admission hospital had a varying population, and throughout the investigation no cases of scabies were found.

Only 5 of the 817 men (0.6%) were infected. Four of these cases occurred in one ward, which contained 45 patients, and the soap was issued here. The remaining 772 male patients (containing only one case of scabies) served as a control. The final arrangement, therefore, was that a total of 705 patients, of whom 93 (13.2%) were infected, were supplied with 10% tetmosol soap for their ablutions; while 1,213 patients, of whom 18 (1.5%) were infected, continued to use ordinary soap.

(*b*) *Examination After Six Weeks.*—As the table shows, after six weeks the situation was greatly altered. Among the 705 patients using tetmosol soap the incidence of scabies had decreased from 13.2 to 1.3%, and no new cases had occurred during this period; whereas in the control group, among 1,213 patients using ordinary soap, the incidence of scabies had increased from 1.5% to 2.1% and 8 new cases had been recorded.

(*c*) *Final Examination After Eleven Weeks.*—All the previous examinations were carefully carried out as described above, but for this final scrutiny particular care was taken to ensure that no cases were missed. Nine patients in the "tetmosol group" were found with scabies, none with heavy parasitic infections, and only three with mites on the hands. All of them showed signs of scabies at the original examination, made before the experiment started. Five of the nine cases (all with one or very few mites on the feet only) appeared clear at the six-weeks examination, but I believe that if the scope of the survey had allowed for a routine examination of other parts of the body on that date infection would have been discovered. Incidentally, three of these infected cases were fed patients who would have less access to the soap and whose feet might receive less lathering than the others. There were no new cases. A marked rise occurred in the control group, 3.5% of whom were now infected; the number of new cases had increased from 8 to 24 during the course of the experiment.

(*d*) *Sensitivity to Tetmosol Soap.*—Previous work (Gordon *et al.*, 1944) had shown that, while most individuals could use tetmosol soap for long periods without any harm to the skin, a small proportion of cases might find it irritating. Of the 705 patients originally issued with the soap three only, all of them women, appeared to be sensitive. Within a few days of starting to use the soap they developed an erythematous rash in the areas washed. These women were withdrawn from the experiment and the rash disappeared rapidly. No person developed a sensitivity after the prolonged use of the soap. None of the 45 men showed any sensitivity.

Discussion

These experiments show that tetmosol soap can act as a very efficient means of controlling scabies. It not only prevents the disease from spreading but also cures the majority of those who use it for a few weeks. There seems no doubt that its general employment would rapidly eliminate scabies from a community. Where efficient centres for treatment exist, and where it would prove difficult to enforce the use of medicated soap, benzyl benzoate is much to be preferred as a therapeutic agent, but there must be many parts of the world where tetmosol soap would have a wide field of application. It is obviously ideal for asylums and similar institutions; it would not be necessary for it to be used always, for an issue for a month or two each year (followed, the first year, by benzyl benzoate therapy for any few residual cases) would soon eliminate the disease.

The proportion of sensitive individuals unable to use tetmosol soap appears fortunately to be very small. They can be detected before any serious damage has been done to the skin, so there is little risk of causing dermatitis.

It may be noted that clothing and bedding were not disinfested in this experiment; the use of the soap alone successfully cured the majority of cases.

Summary

Patients in a mental hospital used tetmosol soap for a period of 11 weeks. Scabies, which was very prevalent at the start of the experiment, was almost entirely eliminated. Most cases were cured, and the spread of the disease was prevented.

These experiments could not have been carried out but for the advice and co-operation of Prof. R. M. Gordon, Prof. T. H. Davey, and Mr. K. Unsworth. It is necessary to preserve the anonymity of the mental hospital concerned; but I wish to acknowledge that the success of the work was largely due to the help given by the medical superintendent and his staff. I am indebted to Mr. W. C. Bartley and to the men from the Sorby Research Institute for the care taken at the examinations. Also to Dr. H. A. Krebs, who had prior claim on the services of the volunteers during part of the period, for enabling them to continue with this work. The expenses of the investigation were met by the Medical Research Council, who also arranged for the supply of the soap through Imperial Chemicals (Pharmaceuticals) Ltd.

References

Davey, T. H., Gordon, R. M., and Unsworth, K. (1944). *Ann. trop. Med. Parasitol.*, **38**, 46.
Gordon, R. M., Davey, T. H., Unsworth, K., Hellier, F. F., Parry, S. C., and Alexander, J. R. B. (1944). *British Medical Journal*, **1**, 803.
Mellanby, K. (1944a). *Parasitology*, **35**, 197.
—— (1944b). *British Medical Journal*, **1**, 689.

A circular issued by the Department of Health for Scotland announces that more beds are now available for civilians in Scottish hospitals. In future there will be fewer beds reserved for the emergency hospital scheme in voluntary hospitals and local authority general hospitals. This should help to remove the difficulties which hospitals have found in providing for the needs of the civilian population. "In view of the altered war situation, which has already led to substantial reductions in the general Civil Defence Services," the circular states, "the Secretary of State considers that it is now possible to meet current and estimated future requirements in hospitals for Service casualties and other patients within the scope of the emergency hospital scheme with a smaller number of beds than have been reserved formerly for the scheme." In future, hospitals will be authorized to admit to their reserved beds other civilian patients as well as those in urgent need of treatment, when the immediate requirements of the emergency scheme permit this to be done.

ARTIFICIAL INSEMINATION

BY

MARY BARTON, M.B., B.S.
First Assistant, Fertility Clinic, Royal Free Hospital

KENNETH WALKER, F.R.C.S.
Genito-urinary Surgeon, Royal Northern Hospital

AND

B. P. WIESNER, D.Sc.
Consulting Biologist, Royal Northern Hospital

The use of artificial insemination—i.e., the deposition of semen in the vagina, the cervical canal, or the uterus by instruments—has been discussed by several authors with personal experience of the method (Seguy and Vimeux, 1933; Lane-Roberts *et al.*, 1939; Cary, 1940; Green-Armytage, 1943; Guttmacher, 1942). We ourselves have used, and in certain respects developed, the technique of artificial insemination (A.I.) during the past five years. We can present but few conclusions in what must necessarily be a developing field, and cannot discuss the biological implications (e.g., determination of ovulation, frequency of male infecundity) of our observations in this interim report to clinicians. It is hoped, however, that it may serve to dispel certain misconceptions that are constantly arising.

Scope of Artificial Insemination

Impotence.—Many impotent husbands are capable of producing fecund semen by masturbation, and some impotent men regularly indulge in masturbation. Where treatment of impotence has failed, recourse to artificial insemination is indicated. Defects in the fecundity of the wife are first attended to. The physician then carries out an artificial *vaginal* insemination and Sims test (Barton and Wiesner, 1944) in order to determine the degree of cervical invasion by spermatozoa. Provided that invasion is adequate the wife is taught to carry out self-insemination within the fecund phase of the cycle (see below). The technique is as follows: She first douches with warm water (1 pint); half an hour later the husband passes semen into a cold dry glass container and allows it to liquefy at room temperature (about 10 minutes). The wife then draws up the semen into a clean dry urogenital glass syringe, and, lying on her back with knees drawn up, she passes the syringe into the vagina and very slowly expels the semen. The prone position should be retained for about half an hour. When teaching the patient it is important to demonstrate the distance to which the syringe may be inserted. The above procedure might suitably be employed in cases of hypospadias where insemination is superficial, but we have as yet had no such case under our care. Conception should occur readily. If it has not occurred within four or five cycles the case is reviewed. We have records of 11 selected cases. Eight pregnancies resulted in these. One ended in miscarriage; the patient conceived again subsequently and the pregnancy is progressing. Five pregnancies went to term. One other continues at present.

Dyspareunia.—In some cases of incurable dyspareunia (e.g., those developing after injury or operation) artificial insemination may present the only means of obtaining pregnancy. In our opinion A.I. should not be used in any case of dyspareunia unless persistent attempts at cure have failed; it should be remembered, however, that in some neurotics pregnancy itself may dispose of the disability. Vaginal self-insemination is the method of choice.

Failure to Ejaculate.—There are numerous cases, difficult to detect, in which the husband, though capable of penetration and sustained erection, either fails to ejaculate during intercourse or emits only a minute quantity of azoospermic fluid. In some of these cases ejaculation of fecund semen takes place during sleep. Where treatment has failed, the patient may be instructed to wear a washable condom during sleep, and the semen may be used for vaginal insemination, provided this is done immediately liquefaction has taken place.

Inadequate Cervical Invasion.—Sterility and reduced fertility are often associated with impaired cervical invasion by spermatozoa (Sims, 1868). Spermatozoa may be scarce in, or entirely absent from, the cervical mucous plug, even though the sperm count and motility *in vitro* be high (Barton and Wiesner, 1944; Cary, 1940). We have found that spermatozoa which fail to invade the healthy cervical ovulatory mucus from the vaginal pool and are subject to rapid death in the vagina may under certain conditions survive for prolonged periods after transfer into the cervical canal. Furthermore, the occurrence of conception after deposition of asthenic spermatozoa in the cervical canal (first reported by Seguy) shows that the cervical mucus may maintain not only their motility but also their fertilizing capacity. The most critical task in the life of the asthenic spermatozoon appears to be penetration into the cervical mucus. No extended survival results from transfer into certain types of cervical mucus (e.g., those often seen in endocervicitis or in ovarian deficiency). Both experiment and clinical experience suggest that cervical insemination with the husband's semen (A.I.H.) should be used in cases of defective invasion, provided, first, that treatment of the male has failed to procure adequate invasive potency; secondly, that the spermatozoa show good initial motility; and, thirdly, that the cervical mucus during the ovulatory phase is clear and not gelatinous. More precise determinations (such as viscosity) can be made by *in-vitro* tests unsuitable for clinical routine. It should be added that impairment of invasion may be mechanical (e.g., malposition or abnormality of cervical passage), and some authors (e.g., Guttmacher, 1942) regard this condition as meriting artificial insemination.

Male Sterility and Other Indications for Artificial Insemination with Donated Semen (A.I.D.).—We have employed donated semen in a limited number of cases. In some of these (e.g., bilateral cryptorchidism, occlusion of ducts, fibrosis testis, incurable impairment of ejaculation) male sterility had to be regarded as permanent; in some others (e.g., extreme oligozoospermia) a condition of severe subfecundity had failed to respond to treatment, so that chances of conception were remote. In two cases biological considerations were decisive. In one of them deafness had recurred in three successive generations of the husband's family; in the other, transmissible nervous disease was established. Many other reasons have been advanced by patients requesting artificial insemination with donated semen (A.I.D.). Thus some couples, too impatient to submit to treatment, prefer the easy approach of A.I.D. This attitude is common in fecund women married to subfecund men. But quite often the husband is unwilling to undergo treatment, and the suggestion of A.I.D. comes from him. Some women demand A.I.D. without the knowledge of the infecund husband, claiming that paternity would save his self-esteem; such women are usually good and devoted wives who, having longed for children for many years of marriage, have rejected other ways of becoming pregnant. Others are impelled by different motives: e.g., they plan to force marriage by what they consider to be a guiltless conception. Neither these nor other more dubious reasons have been accepted by us; for while we do not feel in a position to suggest the general principles which should govern the application of A.I.D. we recognize the need for the greatest caution. In our work we have taken into account not only biological and medical factors but also the suitability of the couple for parenthood, so far as this can reasonably be estimated.

Procedure and Technique in A.I.H. and A.I.D.

Choice of Date

The wife is instructed how to record her rectal temperature throughout the menstrual cycle on waking; for as a rule the variations of the temperature not only reflect the two phases of the cycle (follicular and luteal respectively) but also indicate clearly enough the approximate date of ovulation (see Chart). Any intelligent woman, once fully instructed, is capable of recognizing the ovulatory phase by the low level and/or the peculiar preluteal drop in the waking temperature. If this be indistinct in any cycle she should attend on the first day of the luteal rise. She is also asked to observe other signs of ovulation (Mittelschmerz, spotting, etc.). The final decision concerning the performance of insemination in any given cycle depends on the condition of the cervical plug, for if it is opaque the ovulatory phase is probably no longer, or not yet, in being. It should be borne in mind that even fecund women will

occasionally have a cycle with indistinct ovulatory signs, and in less fecund women this may be more frequent.

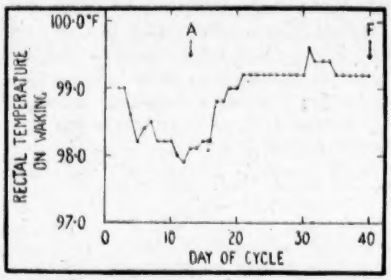


Chart of waking rectal temperature* of an A.I.D. patient during only cycle under treatment. A: Day of artificial insemination. F: Day of positive Friedman test.

Insemination with Husband's Semen (A.I.H.)

We have found, in joint investigations with Dr. H. Coke (unpublished), that semen not infrequently carries pathogenic organisms which it would be unwise to deposit in the cervical canal. A bacteriological test is necessary in all doubtful cases (e.g., in sperm agglutination, pyospermia, haemospermia, etc.). Any infection should be attacked by local and systemic treatment of the husband. If these attempts fail the semen should not be used. Generally speaking, it is important to raise male fecundity to the highest possible level. Further procedure varies according to specific conditions. Where the main seminal deficiency consists in the lack of invasive power of a well-populated and viable semen the patients may be instructed to have intercourse half an hour after a thorough vaginal douche (warm water only). Semen may then be obtained from the posterior fornix within 60 minutes. The use of vaginal pools involves certain theoretical risks such as transfer of organisms from the vagina into the cervical canal. But some couples cannot adjust themselves to other methods of obtaining semen. The method is also valuable when it is undesirable, for psychological reasons, that the husband should be asked to masturbate repeatedly.

In cases of oligozoospermia and with semen of low viability masturbation specimens should be collected in suitable glass containers* just before insemination. The semen is used without additions and without any further manipulation except in cases of pronounced oligozoospermia, when it may be concentrated by gentle centrifugalization (approximately 500–1,000 revolutions per minute). In these cases the deposit is used with a small volume of supernatant fluid.

The patient is placed in the lithotomy position and the cervix, exposed by a dry unlubricated speculum, is swabbed with dry cotton-wool. A glass syringe fitted with an intra-uterine cannula or a special syringe of plated metal† is used, and a small quantity of semen (0.1–0.2 c.cm.) is drawn up into this syringe, which must be dry. As a result of certain still incomplete experiments we are under the impression that larger quantities of semen may impair the chances of intracervical survival of sperms. The tip of the cannula is passed into the cervical canal (1/4–1/3 in. of the external os). The semen is then injected *very slowly* into the canal. Most of the semen usually escapes from the cervix, but a small amount is retained. Forceful injection, recommended by Guttmacher (1942) and others, has neither an empirical nor a physiological basis; furthermore, it involves the risk of intra-uterine instillation. The patient may be allowed to leave a few minutes after insemination. Slight and passing discomfort sometimes follows cervical insemination; it is never severe, and may be disregarded.

It is an essential aspect of A.I.H. that it may have to be repeated frequently—i.e., *monthly* for a period of two years if necessary—before success is achieved or failure may be presumed. For the occurrence of conception is a matter of chance, though of high probability, even in fecund couples leading a normal married life. In infecund couples the chances are small even though A.I.H. be used, hence repeated "exposure to risk" is indicated.

* Semen-containers and syringes should be cleaned without the addition of the usual antiseptics. They must be thoroughly dried before use.

† Supplied by A. J. Travis to our design.

A.I.D.: (1) Selection of Donors

So far as we know, no organized collection of semen for donation has ever been established, and the provision of semen is therefore entirely in the physician's hands. This inevitably involves considerable difficulty in obtaining suitable material, but has the advantage that the physician knows the donor individually. Certain facile assumptions suggested by purely biological considerations must be refuted. Thus the husband's brother might be regarded as the first choice because of genotypical resemblance; but experience shows that this choice is usually incompatible with secrecy, and that it is conducive to emotional disturbances involving both husband and wife. In fact, the prospective parents should never be aware of the identity of the donor. We have come to this conclusion as a result of disturbing observations in cases where the donor (though biologically approved by us) was chosen by the couple. It would seem that the responsible donor and the maternal woman are emotionally too deeply involved in procreation to regard their relationship with detachment. Now we carry anonymity to the point where the donor is never described to the patient save in most general terms which exclude identification; nor does the donor receive any specific information concerning the recipients. But if he wishes to limit his donation to certain types of parents his wishes are, of course, considered. In view of requests and suggestions made by medical men and others it should be emphasized that in our opinion no specimen of semen should be used for insemination except with the explicit agreement of the donor.

The principles which govern the choice of donors are designed to reduce obvious biological dangers. There must be no history of transmissible disease; the family history of the donor must be free of adverse characteristics of possible genetical significance, such as alcoholism, criminality, or tuberculosis. Excessively pronounced physical features are undesirable not only because they may be objectionable themselves but also because they might facilitate identification of the donor.

Positive considerations concerning the eugenic quality of the donor's stock will largely be governed by the scientific views and perhaps the individual preferences of the physician concerned. Our choice has favoured men of intellectual attainments whose family history indicated that the members of at least two preceding generations were not only intelligent but also endowed with good capacity for social adjustment. Others might prefer donors characterized less by mental than by physical characteristics or achievements (athletes, etc.). In fact, we have hesitated before accepting cases for A.I.D. in which the interests of the parents were primarily athletic or sporting; and, speaking quite generally, the selection of donors with respect to the characters of the parents is a wide and complex problem. One has to bear in mind that the legal father may hope for a donated child with whose personality he might be in accord, and it must further be remembered that difficulties in the father–son relationship might be accentuated by the circumstances of A.I.D. Obviously, even the most careful choice of the donor for each case could not guarantee the desired characteristics, but it would increase the chances of matching parent and child. Present conditions make any such selection impossible.

The donor should have at least two legitimate children; this is of importance not only from obvious genetic considerations but also because his parental drive will have an available object. He must be of mature age (30 to 45), so that his character, viability, and other qualities can be properly assessed. His individual health should be adequate—primarily because it reflects constitutional characteristics. A certificate of the donor's physician is requested and a Wassermann test is carried out.

The fecundity of a donor must be reasonably high. The semen must have a volume of at least one c.cm., it must liquefy and rapidly become homogeneous, the sperm count must exceed 30 millions per c.cm., and there must be no spontaneous agglutination. Viability must be high—1% after 100 hours at 4° C. The spermatozoa must show little variation

of head-lengths and include less than 15% abnormal forms. Indifferent or intermediate and pathological cell-forms (e.g., di Biasi cells) must be rare. The bacteriological cultures obtained from the fresh semen must be sterile or show but a light growth of harmless contaminants such as *Staph. aureus* and diphtheroids. These requirements are dictated not only by the desirability of a high conception rate but also by the need to reduce the risks of miscarriage. Periodic checks upon the seminal conditions, etc., are made.

The donor's blood group should be identical with that of one parent if it is desirable to minimize the possibility of bastardization. The parents usually desire donors of like race —e.g., Jewish couples usually ask for a Jewish donor. On the other hand, it is a curious reflection on the present epoch that some have specifically asked for non-Jewish donors, since they want to safeguard the child so far as is possible against anti-Semitism.

The greatest difficulties in A.I.D. arise from the fact that to most balanced men the task of donation is unpleasant, and because of the low fecundity of most mature men. Hence but a very small panel of donors has been established so far. Fortunately, the number required at any given time is not great. For while a specimen of semen should not be used for more than a few hours after emission, it can during this period be utilized for at least 20 inseminations. In theory the number of possible conceptions from one specimen is very much higher, for we have satisfied ourselves that a single insemination with 0.01 c.cm. of semen may suffice to procure pregnancy. It follows that a fecund donor submitting two specimens weekly could, with ideal conditions, produce 400 children weekly (that is, about 20,000 annually).

A series of systematic observations has shown that A.I.D. has a good chance of success on any one of three cycle days—viz., on the day of the minimum waking temperature, on the day preceding it, and on the first day of the rise. Thus the general organization of A.I.D. requires an arrangement by which fresh semen is delivered to the laboratory two or three times weekly, while the recipients are asked to attend at the corresponding hours during the presumptive ovulatory phase. But while a small panel of donors can serve the immediate purpose, it seems desirable to limit the number of children any one donor should be allowed to have, lest the risk of marriage between sibs not known to each other should assume dangerous proportions.* For this reason we have set an arbitrary limit of 100 children for each donor—not yet attained by any one donor.

The instructions given to a donor are simple, and are mostly concerned with delivery of the semen in a fresh condition without contamination. A sterile glass-stoppered container is supplied by the laboratory, and the specimen is maintained at room temperature. Donated semen is used for cervical insemination as described previously for A.I.H.

A.I.D.: (2) Preparation of Parents

A couple accepted for A.I.D. are made clearly aware of its biological, legal, and other implications and difficulties. Most couples have preconceived views concerning the method. Apart from believing that a single insemination on an arbitrary date is all that is required, they also assume that the husband can be nearly reproduced by a specially chosen donor. Hence they must be told that no likeness, physical or otherwise, can be guaranteed. The explanation of potential legal complications is based, in the absence of precedent, on counsel's opinion, for which we are indebted to our legal advisers. It is emphasized that the husband might change his attitude in years to come and attempt to disown the child. Both the possibilities and the difficulties of such attempts are pointed out. The couple are further informed that the child will be legitimate if the husband is registered as the father. Such registration is demanded although it constitutes an offence. For purely formal protection of the physician a written request for A.I.D., signed by husband and wife in the presence of the physician, may be obtained. This is filed under seal, and arrangements are made for the destruction of the document at the physician's death. The prolonged consultation required at this stage provides an opportunity to impress the couple once more with the significance of their decision; and the physician can assure himself that the husband is not either acting on the spur of an ill-considered decision or submitting half-heartedly to his wife's request. On this as on other occasions an attempt must be made to establish the mutual confidence between patients and physician which is needed for their relationship and which is more important than any formal legal safeguard; the latter, in any case, could not cope with the numerous human complications which might arise in this field. Lastly, the patients are assured that complete secrecy will be observed.

Dangers

1. In our experience no dangers attach to the actual process of cervical insemination provided that no air is injected and no semen is allowed to enter the uterine cavity. But dangers may arise from the use of semen infected with pathogenic organisms, and while it seems that the healthy cervix is endowed with a defence mechanism against some semen-borne organisms it is not possible to detect impairments of cervical defence. At this point it may be remarked that we originally employed intra-uterine insemination as suggested by various authors. But on discovering the high incidence of seminal infection we abandoned this often painful procedure, which in the hands of an American author has resulted in grave injury (pelvic abscess and permanent subfecundity) (Bickers, 1944).

2. The question of dysgenic conception from the use of subfecund semen has often been raised—not only in the literature but also by patients who fear that the predominance of abnormal or asthenic sperms may be reflected in the constitution of the child. Now, this is indeed one of the most difficult problems in all animal-breeding, and yet one which has scarcely been formulated precisely—much less solved conclusively. It must be remembered that deliberate (experimental) damage to animal spermatozoa may not prevent conception but may result in non-viable zygotes, and that, in man, exposure of the father to some poisons has been stated to affect the offspring (Hamilton, 1925; DeLee, 1924). In human reproduction a close association of high miscarriage rate with semen of low fecundity has been claimed, and this association is indeed a common experience in the therapy of sterility: threatened miscarriage, usually at the end of the third month, occurs in more than one-third of the women who have conceived from subfecund semen. Cervical insemination might increase the incidence of non-viable progeny by interfering with the mechanism of cervical selection which inhibits the invasion of the cervix by abnormal spermatozoa. In artificial insemination the cervix receives many abnormal spermatozoa which could not invade under their own power. Much more experience must accumulate before the standard of the progeny of subfecund parents can be assessed properly. But it is encouraging that normal and viable infants were born in all our cases of A.I.H. in which pregnancy went to term without accident of parturition or gestation. Also, the frequency of tubal pregnancy and other abnormalities of gestation was no greater than might be expected in a corresponding group of unaided conceptions.

3. A potential danger arises from the tempting chance of experiments with semen. Human sperms die fairly rapidly unless specific media are employed which can be used for storing semen. Again, infected semen can be disinfected without visibly affecting the sperms. Such procedures might simplify the task of artificial insemination, but we feel that interference with the semen carries the risk of affecting the progeny—a risk which may safely be accepted in animal-breeding but never, in our opinion, in human reproduction. Now, interference with semen should be carried to the point where storage or transport over long distances (which has been successfully used in America) is avoided. Artificial insemination should follow the natural course of events as closely as possible, and perhaps even centrifugalization should be regarded with reserve.

4. Lastly, there is always the danger of psychological damage to the patients, both husband and wife—e.g., either through the inevitable interference with their sexual relations or through the consciousness of reproductive inferiority. Careful initial selection of cases and attention to the patients' reactions can reduce this risk.

Results

For a variety of reasons no useful statistical analysis of the results of A.I. can yet be presented. The method and technique of A.I. have changed much during recent years—e.g., through the systematic use of the temperature chart—and the selection of cases has tended to become more stringent; the number of inseminations carried out before abandoning a case has increased, and so on. Hence results of earlier series are of little significance. Furthermore, in assessing the results of any given group, such factors as the age of the wife, the degree of male fecundity, etc., must be taken into consideration, and these vary greatly. The primary factor, however, is represented by the assessment of the case. Cases can be so selected that

A.I.H. will be successful in most, or in hardly any case, and the same applies to A.I.D. A few illustrations are given below:

1. *A.I.H.*—In a recent series of 30 successive cases A.I.H. was carried out because of low invasive power of the semen. In addition, spermatozoal density was low (less than 10 millions per c.cm.) in six cases; and more than 15% abnormal head forms were present in the semen of five cases. Female infecundity factors—e.g., impaired tubal function, infrequent ovulation, etc.—were detected or strongly suspected in six cases. Insemination was carried out in at least four successive cycles where necessary and, as a rule, more than once in each cycle. One case is counted twice, for the patient miscarried after the first series of inseminations, and then made a second attempt. Nine conceptions occurred—in one case during the first cycle, in the others in the third or fourth cycle. Four pregnancies terminated in miscarriage in the fourth month of pregnancy or earlier; four others resulted in the birth of a viable infant. In the last case the pregnancy continues at the time of writing. In 21 cases no conception was recorded with certainty, but two conceptions may have occurred (? early miscarriage). The negative cases are characterized by a higher average age of the wives, but not by a higher frequency or greater severity of manifest infecundity factors in either husband or wife.

2. *A.I.D.*—A recent series of 15 successive cases in which donor M. was employed consisted of women in whom no serious infecundity factor was discovered, though four of them were 40 years of age or over. Insemination was repeated where necessary in at least six cycles. Conception resulted in 10 cases. The negative cases were represented by one woman in whom insemination was repeated during eight cycles and then abandoned, and the women aged 40 years or over. The fate of the 10 pregnancies varied. One was tubal and had to be terminated; one ended in miscarriage (end of the second month); five went to term uneventfully or are nearing term at present; and three terminated successfully at 45 weeks. The number of cycles during which inseminations were carried out in the positive cases varied from one to seven. It may be said that, in our experience, repeated A.I.D. is nearly always successful in reasonably young women in whom infecundity factors have not been detected. The infants produced by donor M. in this as in another series show no abnormality and are progressing favourably. Their physical types vary widely, and the parents state in every case that they are glad to have availed themselves of this service.

Summary

In some cases of male impotence, dyspareunia, ejaculatory failure, and defective cervical invasion, artificial insemination with the husband's semen may be indicated. In the first three conditions named, self-insemination by the wife is possible.

Artificial insemination with donated semen has been carried out in cases of incurable male sterility and for genetic reasons.

The procedure and technique of artificial insemination with the husband's semen and artificial insemination with donated semen (choice of cycle day, suitability of semen, method of cervical instillation) are described.

The selection of semen donors and the organization of artificial insemination with donated semen are discussed.

Some potential dangers of artificial insemination—e.g., uterine infection, dysgenic conception from defective or damaged sperms—are enumerated.

Two small series of cases are reviewed.

References

Barton, M., and Wiesner, B. P. (1944). *Lancet*, **2**, 563.
Bickers, W. (1944). *Amer. J. Obstet. Gynec.*, **47**, 425.
Cary, W. H. (1940). *J. Amer. med. Ass.*, **114**, 2183.
DeLee, B. (1924). *Principles and Practice of Obstetrics*, 4th ed., Philadelphia.
Green-Armytage, V. B. (1943). *Proc. roy. Soc. Med.*, **36**, 105.
Guttmacher, A. F. (1942). *J. Amer. med. Ass.*, **120**, 442.
Hamilton (1925). *Industrial Poisons in the United States*, New York.
Lane-Roberts, C., Sharman, A., Walker, K., and Wiesner, B. P. (1939). *Sterility and Impaired Fertility*, London.
Seguy, J., and Vimeux, J. (1933). *Gynéc. Obstét.*, **27**, 346.
Sims, J. M. (1868). *British Medical Journal*, **2**, 465, 492.

A search for methods of controlling Scotland's "plague of midges" will be the task of a small committee of Scottish scientists headed by Brig. F. A. E. Crew, professor of public health and social medicine at Edinburgh University, and director of biological research at the War Office. Mr. Thomas Johnston, Secretary of State for Scotland, invited the committee to consider whether measures similar to those used in the Army against mosquitoes and other insect pests dangerous to health could usefully be employed against midges and other biting flies. The committee's first step will be to review what is known about methods of attack on insects and their breeding grounds and to advise whether these methods can be used or can be modified for use against midges.

METHYL BROMIDE POISONING
EFFECTS ON THE NERVOUS SYSTEM

BY

A. BARHAM CARTER, M.D., M.R.C.P., D.P.M.

Physician to Staines County Hospital

Methyl bromide (CH_3Br), a non-inflammable colourless gas at ordinary temperatures and pressures, fairly easily compressible into liquid form, is used extensively as an insecticide, fire extinguisher, fumigant, and refrigerant. It is known to be toxic to man in various ways, and as it is without smell in low concentrations and is 3.3 times as heavy as air it constitutes a very real industrial hazard. The toxic effects described in the literature are: (1) on the skin, giving rise to a vesicular irritative dermatitis and second-degree burns; (2) on the respiratory system, producing bronchitis, bronchopneumonia, pulmonary congestion and oedema; (3) on the alimentary system, with gastro-intestinal upset and hepatic dysfunction; (4) on the nervous system, with both an acute and a chronic symptomatology. It is with the last that this paper deals, and although references show a familiarity with other manifestations, no attempt has been made to evaluate or define the more chronic effects on the central nervous system.

Review of Literature

Heiman (1944) has given a full review of the literature (chiefly Continental) concerning the general toxic effects of methyl bromide on man. An analysis of cases describing the acute neuropathies produced by short exposure to high concentrations shows in the majority a prodromal stage of headache, dizziness, nausea, vomiting, and generalized weakness with transient diplopia and amblyopia, followed by a period of mental excitement with focal or generalized epileptiform convulsions, muscular tremors and spasms, mental confusion, psychomotor acceleration, and restlessness, amounting at times to acute mania. This stage is accompanied by fever and occasionally cyanosis with methaemoglobinaemia, and in fatal cases is followed by coma, increase in muscular spasms, and convulsive seizures with death in hyperpyrexia.

If the patient survives, there follows a long period of convalescence, lasting up to 18 months in a few cases, in which the epileptiform attacks become less frequent, the mental confusion and excitement gradually abate, and visual disturbances slowly improve, although nystagmus and sluggishly reacting dilated pupils persist, with mental depression and insomnia. Morbid hunger has also been described in this connexion.

Pathological material confirms the involvement of the brain and meninges in the acute type of case, but no reference is made to the spinal cord or peripheral nerves. Glaser (1928) described oedema of the brain with no further details. Goldschmid and Kuhn (1920) found degeneration of the cortical cells in the cerebral hemispheres, particularly in the frontal and parietal lobes. Duvoir (*et al.*, 1937; 1939) found acute congestion of the brain and meninges, and Heiman decrease of cerebrospinal fluid, swelling of the brain with engorgement of pial veins but no haemorrhages. The brain was found to contain traces of methyl alcohol and formaldehyde, and 62 mg. of bromide in 300 g. of tissue. No microscopical findings were mentioned.

The neurological effects of long-continued exposure to small concentrations have been described in only a few cases, and no pathological material is available, except from animal experiments. Jacquet reported one case with vertigo, weakness, transient diplopia, and dimness of vision following brief exposure, and two cases with similar symptoms plus flaccid paralysis of legs and psychic disturbances after more prolonged exposure to an unknown concentration. Watrous (1942) much later reported the occurrence of mild nervous symptoms in 31 persons out of a total of 90 working in a filling-and-sealing room of a methyl bromide plant who were exposed for two weeks to a concentration of less than 35 parts per million. Headache, vertigo, difficulty in focusing, muscular pains, and dimness of vision were the symptoms observed, but no neurological abnormalities were found on examination. All these cleared up within two months of the patients' leaving the factory.

De Jong (1944) has reported three cases with involvement of the central nervous system who were exposed to methyl bromide vapour in low concentrations for an average of six months before the onset of symptoms. One of these patients had a history of numerous methyl bromide blisters on his hands. The nervous symptoms in these cases were vertigo, unsteadiness, and blurring of vision, followed by diplopia, weakness, numbness and tingling of the legs, unsteadiness of gait, and headache. No psychic disturbances were observed. Examination revealed moderate dilatation of pupils, with nystagmus, some cerebellar ataxia of the limbs, exaggerated tendon reflexes, and Babinski response in one case; diminished ankle-jerks in one case; normal abdominal and cremasteric reflexes, diminution of vibration sense in both legs with retention of position sense, and diminished cutaneous sense peripherally in one case. The C.S.F. was normal in each instance, not under pressure. Blood counts were normal, and the blood bromide varied from 9 to 13 mg. of sodium bromide per 100 c.cm. All the cases showed slow improvement over three months.

Meadows, in a personal communication, describes the case of a man aged 36—employed in the same factory as the case described below in detail—who had been working with methyl bromide for two months when he began to complain of numbness and tingling of both hands and feet, with progressive weakness of the legs. This was followed by dimness of vision, with inability to read near print, and peeling of hands and feet. On examination visual acuity was impaired, nystagmus was present, there was weakness but no wasting in the lower limbs, ankle-jerks were absent, and the left plantar was doubtful. There was loss of vibration sense in the legs, but no other sensory changes. Investigations of blood and C.S.F. were negative. The condition improved, and the patient was advised not to return to his work. It is only fair to add that at this time (a year ago) investigations failed to reveal any leakage of the gas, but when a further case arose a leakage was found in the department dealing with insufficiently filled extinguishers requiring reopening and refilling.

Animal experiments are interesting. Four investigators in America exposed rats, rabbits, guinea-pigs, and monkeys to varying concentrations of methyl bromide for varying times. The particular experiments appertaining to chronic neurological effects showed that 14 to 46 exposures to concentrations of 0.25 mg. per litre produced paralysis of a flaccid type in the limbs of rabbits and rhesus monkeys: these paralyses were bilateral, and affected equally the front and hind legs of the rabbits but chiefly the legs of the monkeys. On discontinuing the exposures when these paralyses had developed, the monkeys showed loss of equilibrium with a general ataxia of movement suggesting to the experimenters a cerebellar involvement. The reflexes became normal when the function of the limbs returned. Exposures to concentrations of 0.13 mg. per litre produced paralyses in rabbits, but had no effect on monkeys. Careful histological examination of the brain and spinal cord in the affected animals showed no abnormalities, but no mention is made of examination of the peripheral nerves.

Illustrative Case History

A male aged 17 was admitted to Staines County Hospital with the history that he had worked at a methyl-bromide-producing factory for 18 months, but had changed his type of employment a year later. During the six months before admission he had worked in the refilling department, where fire extinguishers which had been insufficiently filled were reopened and refilled with methyl bromide until they had attained the standard weight. He and the other employees in this department realized that a certain amount of gas escaped, but there appeared usually to be sufficient extraction by ventilation. The more efficient the workman the less the escape of gas. The patient was always rather clumsy, and the employees remarked on the increase of escaping gas in his work. On questioning, it was stated that the gas had a peculiar stale odour, "as though the air had not been changed for a fortnight" (this is contrary to the general belief that the gas is odourless).

Two months before admission the patient began to notice weakness of his legs, interfering with his ability to jump on chairs, buses, etc.; at the same time he felt his toes tingling and found difficulty in forming his words. His mates remarked that "he was more stupid than usual," and he developed a methyl bromide dermatitis and burns on his hands. At no time did he complain of his symptoms to the factory doctor, who examined the employees carefully each week. One month later he found that his hands were clumsy and that he was much slower in his work and unable to run owing to weakness of the legs. He had difficulty in going up and down stairs, and began to notice he was seeing double. There were no further pains or any dysaesthesiae. Three weeks later—a week before admission—he was unable to read or see things close to him, and his speech was becoming worse, although his unsteadiness of hands was stationary. On the day of admission he was hardly able to walk to work; he complained of constant double vision, giddiness, and weakness, and when he got to his job he fell down and was quite unable to get up. He said his head ached and "he couldn't see his feet." Many of his symptoms had been noticed by his fellow employees, although they had experienced none of them, and these were ascribed to his unhappy home life with a cruel stepfather. On inquiry the home life of the boy was found to be unsatisfactory, but no overt cruelty seemed likely and his diet appeared to be adequate. He had no history of sore throat.

On admission he was mildly confused, with a considerable slurring, ataxic dysarthria, and was unable to stand or walk, owing to weakness of his legs. His confusion was chiefly a disorientation in time, and it was impossible to elicit any chronological history from him. He was somewhat dull and retarded, but no other psychic abnormalities were found. Pulse and temperature were normal, and the only abnormal signs were found in the nervous system. His pupils were dilated, with good reaction to light but less to convergence-accommodation: he was unable to read, but had 6/9 vision in both eyes at 6 metres. Visual fields were full to confrontation, and his disks were normal. He had lateral nystagmus, and a fine rotatory nystagmus in both eyes on looking up, with diplopia at extremes of lateral movement. The upper limbs were of normal tone, without weakness, and showed diminished tendon reflexes. Slight motor incoordination was present and he was unable to perform rapid repetitive movements. There was no sensory loss. The abdominal reflexes were greatly increased and cremasterics normal. In the lower limbs undue flaccidity with marked motor weakness at all joints was observed, and the knee-jerks were just present, although the ankle-jerks could not be obtained. Motor ataxia in both legs was very obvious, and the left plantar response was Babinski. Vibration sense was absent in both legs up to the knees, and there was poor appreciation of position on the right. No superficial sensory changes were found. There was precipitancy of micturition. Lumbar puncture was performed and a clear freely communicating fluid obtained at a pressure of 100 mm. of water.

Two days after admission he began to be able to read and could move his legs about in the bed without trouble; his hands had lost their ataxia. A week after admission he showed nystagmus, ataxic dysarthria, and a broad-based staggering gait, with generalized reduction of tendon reflexes and diminished vibration sense in both legs. His plantars were now flexor, and he could focus normally without diplopia. The picture was very reminiscent of hydantoinate (epanutin) intoxication. The patient's condition slowly improved and he was fit for physiotherapeutic re-educational exercises a month after admission, by which time he had a slightly slurred speech, some difficulty in turning and walking fast, and nystagmus. All other abnormalities had cleared.

Seven weeks after admission he was discharged with no residual sequelae, and was advised not to return to employment where methyl bromide was used.

Investigations.—Cerebrospinal fluid:—Protein, 40 mg. per 100 c.cm.; 4 lymphocytes per c.mm.; chlorides, 640 mg. per 100 c.cm.; bromide (sodium), 27 mg. per 100 c.cm.; W.R. negative; Lange gold curve, 0000000000. Blood count:—Red cells, 4,850,000; haemoglobin, 90%; white cells, 9,000—polymorphs 70%, lymphocytes 26%, monocytes 2%, eosinophils 2%. The urine showed no abnormality.

Discussion

In exactly half the cases of methyl bromide poisoning described in the literature (39 out of 78) subacute or chronic effects on the nervous system have appeared, and in addition animal experiments confirm this type of damage from prolonged exposure to small concentrations of the gas. The neurological signs divide themselves into central and peripheral effects, and the latter seem more important in the chronic cases. These appear to be the result of a toxic peripheral neuritis with numbness, tinglings, flaccid pareses, loss of reflexes, and few sensory changes except loss to vibration. In some cases there was muscular wasting with complete paralysis, although no increase in protein or cells was found at any time in the cerebrospinal fluid.

The central effects described comprise headache, transient diplopia, difficulty in accommodation, dimness of vision, dysarthria, generalized incoordination, and vertigo. In four cases only, with prolonged exposure, psychic disturbances appeared

showing retardation of thought, drowsiness, mild disorientation, and slow response to questioning. Objective signs were present in 10 cases of this type, and included nystagmus, pupillary dilatation with sluggish reflexes to light, diminution of vision, cerebellar ataxia and dysarthria, and loss of vibration and position sense. Centrally, therefore, the main incidence seems to be on the optic nerves, oculomotor nerves, cerebellar connexions, and posterior columns, with occasional involvement of the higher centres producing psychic disturbances.

Treatment up to the present has been only symptomatic, as these cases improve with rest in bed and removal from exposure to the gas, and no great increase in blood or cerebrospinal fluid bromide has been found (up to 27 mg. of sodium bromide per 100 c.cm.). It is presumably the methyl combination that does the damage, as bromide poisoning is not clinically apparent until blood concentrations of above 100 mg. per 100 c.cm. are reached.

Convalescence is prolonged, with persistence of some ataxia, undue fatigue, and nystagmus long after the disappearance of the peripheral neuritis, but most of the cases seem to have recovered within a year. Two patients were returned to employment where the risk of exposure to methyl bromide was still present, and both relapsed within six months and had lost time from work owing to residual and recrudescing symptoms.

Summary

The effects of chronic methyl bromide poisoning on the nervous system are described, with a review of the literature and an illustrative case history.

These effects, on analysis, form a pattern of dysfunction mainly affecting the peripheral and optic nerves, cerebellar connexions, and certain spinal cord tracts, although the material available is not sufficient to postulate a definite syndrome associated with methyl bromide poisoning.

On removal of the patient from the toxic hazard the symptoms slowly clear up without any specific treatment and apparently without permanent sequelae, but it is inadvisable to allow return to further exposure.

BIBLIOGRAPHY

Barbour, R. F., Pilkington, F., and Sargant, W. (1936). *British Medical Journal*, **2**, 957.
De Jong, R. N. (1944). *J. Amer. med. Ass.*, **125**, 702.
Duvoir, M., Fabre, R., and Layani, F. (1937). *Bull. Mém. Soc. méd. Hôp. Paris*, **53**, 1540.
—— —— —— (1939). *Bull. Sci. pharmacol.*, **14**, 15.
Floret (1915). *Zbl. Gewerbehyg.*, **3**, 146.
Frieman (1937). *Samml. Vereifl.*, **8**, 31.
Glaister, J. (1942). *Medical Jurisprudence and Toxicology*, Livingstone, Edinburgh.
Glaser, E. (1928). *Dtsch. Z. ges. gerichtl. Med.*, **12**, 470.
Goldschmid, E., and Kuhn, E. (1920). *Zbl. Gewerbehyg.*, **8**, 28.
Heiman, H. (1944). *Industr. Hyg. Bull.*, **23**, 3.
Irish, D. D., Adams, E. M., Spencer, H. C., and Rowe, V. K. (1940). *J. Industr. Hyg.*, **22**, 218.
Schifferli, E. (1942). *Rev. méd. Suisse rom.*, **62**, 244.
Watrous, R. M. (1942). *Industr. Med.*, **2**, 575.

HYPOPROTEINAEMIA DURING RECOVERY FROM SEVERE ANAEMIA

BY

TREVOR DAVIES, M.R.C.S., L.R.C.P.

Resident Medical Officer, Wrexham and East Denbighshire War Memorial Hospital

Generalized oedema due to diminution of the serum proteins is not a common complication of the treatment of anaemia and does not occur unless the ingestion of protein is low during the period of regeneration of haemoglobin. It is not generally recognized that the formation of haemoglobin makes great demands upon the protein reserves of the body. Heath and Taylor (1936) state that for a gain of each 10% of haemoglobin about 80 g. of protein is required and that haemoglobin formation is accompanied by a positive nitrogen balance only when the diet contains more than 6.2 g. of nitrogen a day. They say, however, that haemoglobin formation takes place at a normal rate even in the face of a negative nitrogen balance, and that in these circumstances the demand for nitrogen for haemoglobin formation appears to be supplied by tissue and plasma proteins.

The case described below is one of severe nutritional oedema following the treatment of pernicious anaemia. Faulty dietetic habits had been present for years, and they were not fully corrected during the period in hospital preceding the onset of the oedema.

Case Report

The patient, a married woman aged 49, was admitted to hospital on June 13, 1944. She complained of increasing lassitude and loss of weight over a period of a few years. She stated that she had lost about 4 st. in the past 18 months. She had suffered from dyspepsia most of her life, and often vomited if her food "disagreed" with her. Her appetite had become very poor, and she existed mainly on a soft carbohydrate diet, rarely eating meat. She had had occasional diarrhoea during the past four years. The climacteric occurred early in 1944. There was no history of any previous severe illness.

On examination the patient was very emaciated and pale. The skin had a faint yellowish tint, but she had a malar flush. Her hair was thin and lustreless, and her general appearance suggested a mild degree of pituitary cachexia rather than pernicious anaemia. The tongue showed slight atrophic glossitis, but there was no koilonychia. She had a tachycardia of 100 a minute, but the pulse was regular and of good volume. B.P. 120/75. The heart was slightly enlarged, but there were no murmurs. Examination of the chest revealed no abnormality, and there were no abnormal neurological signs.

A blood count revealed a macrocytic anaemia. Red cells, 1,600,000 per c.mm.; Hb, 35%; C.I., 1.13; white cells, 7,500 per c.mm. A fractional test meal showed complete achlorhydria. A glucose-tolerance test gave normal figures, and the Wassermann reaction was negative. Radiological examination of the alimentary tract by barium meal and enema revealed no abnormality.

Treatment with liver extract, ferrous sulphate, and vitamin B complex was begun, and the haemoglobin and red cells increased steadily, with a maximum reticulocyte response of 10%. On July 7 a painful thrombophlebitis occurred in the left saphenous vein, and a week later a similar condition occurred in the right saphenous, both accompanied by oedema of the leg. The inflammation and oedema subsided quickly, however. On Aug. 9 the haemoglobin was 76% and the red cells 3,700,000 per c.mm. The patient felt very much better and lost her feeling of lassitude, but she could not be induced to eat the full hospital diet. She constantly refused meat, but ate moderate quantities of carbohydrate foods. On Aug. 11 gross oedema of the legs, abdominal wall, and trunk appeared, almost overnight. Ascites was present; but the oedema of the trunk finished abruptly at the mid-dorsal level—none was seen in the arms or face. There was no pain or pyrexia and the urine was normal. No pleural effusions were present, but moist sounds were heard at both lung bases. The urinary output was small (15 oz. in 24 hours). The serum proteins were low: total protein, 4.16 g. per 100 c.cm. (albumin 1.8%, globulin 2.36%); serum sodium, 346 mg. per 100 c.cm.

On Aug. 16, 80 g. of protein in the form of reconstituted plasma was given intravenously by slow drip and the patient was persuaded to eat a high-protein diet. Almost immediately a marked diuresis resulted, the urinary output often exceeding 80 oz. a day during the next three weeks, during which time the oedema almost completely disappeared. On Aug. 20 the total serum proteins had risen to 5.25%, the diuresis was still being maintained, and the oedema was steadily diminishing. On Sept. 8 the patient was out of bed and felt quite well. Very slight oedema of the feet was present, but this was probably attributable to the thrombophlebitis. The serum proteins at this date were: total protein, 5.61% (albumin 3.36%, globulin 2.25%). The liver treatment was maintained and the haemoglobin had risen to 80%. She was discharged from hospital on Sept. 23.

Comment

The above case illustrates the importance, during the treatment of severe anaemias, of maintaining a diet rich in protein so as to provide the excess of protein necessary for haemoglobin regeneration. If protein intake is inadequate the depletion of the reserves of stored protein may not become evident until a considerable amount of haemoglobin has been formed. As stated before, in order to prevent this depletion a daily intake of more than 6.2 g. of nitrogen available for protein formation is necessary. Inadequate intake of nitrogen owing to a psychological distaste for food appears to have been the main factor in the causation of the protein deficiency in this case, but it is interesting to speculate that the fatty degeneration of the liver which occurs in pernicious anaemia may have impaired the hepatic synthesis of tissue protein and that the hypoproteinaemia may to some extent have been "hepatic" as well as "prehepatic."

The treatment of clinically severe states of hypoproteinaemia with gross oedema is a matter of some urgency. When the deficiency is of the "prehepatic" type, due to inadequate

alimentary intake of protein, it is an advantage to supplement an increase in orally administered protein by parenteral therapy. The transfusion of plasma is a convenient method. It was used with success by Holmes (1944) in a similar case of hypoproteinaemia following the treatment of a microcytic anaemia in a vegetarian. Large amounts of plasma may be needed to treat severe protein depletion. The actual amount used in a given case must be judged by the clinical response in the form of diuresis and reduction of oedema. In this case and in Holmes's a moderate amount of plasma was given intravenously to initiate diuresis, and the complete restoration of protein was obtained by an increase in the oral intake.

Recently the intravenous infusion of amino-acids has been suggested by several American workers (Elman, 1940; Shohl *et al.*, 1939; Farr and MacFadyen, 1939; Brunschwig, Clark, and Corbin, 1942). The material used was a hydrolysate of casein; but this is difficult to prepare in a state suitable for intravenous infusion, and unpleasant reactions are said to occur. In "prehepatic" types of hypoproteinaemia the intravenous infusion of amino-acids would appear to have no clinical advantages over plasma transfusion. If plasma is not available whole blood could be used. The casein hydrolysate containing essential amino-acids should be a useful preparation for oral administration, however, particularly in nutritional deficiency of psychological origin.

I wish to thank Dr. J. MacD. Holmes for permission to publish this report and for his advice and criticism.

REFERENCES

Brunschwig, A., Clark, D. E., and Corbin, N. (1942). *Ann. Surg.*, **115**, 1091.
Elman, R. (1940). *Proc. Soc. exp. Biol., N.Y.*, **43**, 14.
Farr, L. E., and MacFadyen, D. A. (1939). Ibid., **42**, 444.
Heath, C. W., and Taylor, F. H. L. (1936). *J. clin. Invest.*, **15**, 411.
Holmes, J. MacD. (1944). *British Medical Journal*, **1**, 620.
Shohl, A. T., Butler, A. M., Blackfan, K. D., and MacLachlan, E. (1939). *J. Pediat.*, **15**, 469.

Medical Memoranda

Gastric Drip Infusion to Combat Dehydration in Infants

In the treatment of neonatal sepsis the outlook is at present largely determined by whether or not the causative organism is sulphonamide-sensitive; whereas in future it will be a question of whether or not it is penicillin-sensitive. But besides this there will always remain the problem of how to relieve the dehydration.

Of the methods at present in common use each has its drawbacks. It is rarely possible to administer enough fluid by the subcutaneous route to overcome the dehydration in a seriously ill infant; besides which there is the danger of introducing another portal of entry of sepsis. The intraperitoneal route is inclined to be accompanied by considerable shock to the baby and is not without risk. The rectal route is usually impracticable owing to diarrhoea. By the intramedullary and intravenous routes it is always possible to give enough fluid; but unfortunately it is all too easy to give too much. This is especially so in babies, where the kidney and heart can be so easily overloaded and where pneumonia is so great a danger. Unfortunate accidents with the intramedullary method have been recorded, therefore we always attempt an intravenous drip first; and though it is fairly rare to be unable to get an intravenous drip running it is a difficult and time-consuming procedure.

In view of all these objections we began in August of this year to try the effect of a continuous drip into the stomach or the lower end of the oesophagus. It is neither an original nor a new technique, but having found it most successful we suggest that it should be more widely known and used in overcoming dehydration. We found that it was easily possible to give to a neonatal baby up to forty ounces of fluid in the day. On the other hand, compared with the intravenous route, the danger of overloading the circulation is greatly diminished. Another advantage is that it is a means of enteral medication and of gradually changing the composition of the fluid. The technique is simple, and a gastric drip can be erected in a few minutes by a competent nurse.

At present our routine is as follows. In any case in which there is severe dehydration a gastric drip is erected. If there has been much vomiting sterile water or normal saline is given in the first instance, and then this is replaced by albuminous fluids such as "secway" or egg-white. It is usually possible to relieve dehydration in one day, but if necessary the drip can be left *in situ* for much longer, provided that the tube is removed every twenty-four hours and the whole apparatus resterilized. The flask, clip, rubber tubing, and drip chamber are the same as for blood transfusion, the rubber tubing being joined to a fine (No. 5) rubber catheter by a glass connexion. The tube is passed through the nose, as we find this less irritating to the baby. It is kept in the required position with strapping on the forehead. The infusion fluid is warmed before placing in the flask and is kept warm by running the tube over a hot-water bottle, which requires frequent changing.

While originally introduced merely as a means of relieving dehydration, it occurred to us that it might at times be a useful method of feeding in weakly or dull babies such as those who are immature or jaundiced. It might have been thought that vomiting would make the technique impossible; but, on the contrary, we have found it a means of stopping even most persistent vomiting. It is very rare for a baby to vomit at all while the gastric drip is running, and we have never had to stop one for this reason. Another possible danger was the production of an oesophagitis, but in the very few cases as yet seen at necropsy this has not been found.

The following cases illustrate the uses of the method.

1. Infant S. Twelve days old on admission to sick nursery, 1 lb. 2 oz. below birth weight. Severe vomiting and diarrhoea. Baby looking moribund. Gastric drip started. Sulphamezathine tab. 1/4 q.q.h. and pulv. kaolin ʒii q.q.h. Drip continued for three days, during which time the fluid was gradually changed from saline to "secway" and then to human milk. When weighed on the fourth day it had gained 7 oz. Vomiting had stopped, the motions were normal, and it made a steady recovery.
2. Infant B. Ten days old. Admitted to sick nursery with diarrhoea and vomiting, 1 lb. below birth weight. Sulphamezathine tab. 1/4 q.q.h. and pulv. kaolin ʒii q.q.h. On account of dehydration put on gastric drip of "secway" for 24 hours. Gradually increased to 2-in-1 cow's milk–water mixture. Nine days later discharged 1 oz. over birth weight.
3. Infant J. Four days old on admission to sick nursery. Very persistent vomiting, even of saline. Marked dehydration. Found to have very inflamed ear-drums. Sulphathiazole tab. 1/4 q.q.h. given. Gastric drip of saline started. No further vomiting. Dehydration relieved. Ears cleared up. Made steady recovery.
4. Infant R. Birth weight 3 lb. Extremely weakly. Fed for one week with gastric drip, during which time it lost only 2 oz. It was then strong enough to be fed from a bottle. It is now 7 weeks old and weighs 4 lb. 12 oz.

In conclusion we would say that for safety, simplicity, and effectiveness in the relief of dehydration we find the gastric drip excellent, and think that its more frequent use in neonatal and infant nurseries would save lives, time, and anxiety.

F. M. B. ALLEN, M.D., F.R.C.P.
W. H. RUTHERFORD, M.B., B.CH.
Jubilee Maternity Hospital, Belfast.

Urinary Retention in an Infant caused by Malignant Growth

Acute retention is not a common complaint in infants. The following case occurring in a baby girl of 6 months may therefore be of interest.

CASE HISTORY

The infant was well developed and had had no ailments until a week before her admission to hospital. The doctor had been called in because the child was in obvious pain and had not passed urine that day. The bladder was distended, and about a pint of urine was withdrawn through a catheter. Catheterization had to be repeated daily for a week.

On admission to hospital a fine rubber catheter was passed quite easily and tied in to drain the over-distended bladder and allow it to recover its muscular tone. After seven days' continual drainage the catheter was removed and for three days normal micturition occurred. It was noticed during this time that the baby was constipated and often became distended with wind. Retention of urine became acute again on the fourth day after removal of the catheter, and so a general anaesthetic was given to allow of a complete examination and to insert a suprapubic self-retaining catheter.

Rectal examination revealed a large, smooth, rounded swelling arising from behind the rectum, lying in the hollow of the sacrum and almost completely filling the pelvic cavity. It was solid, moderately hard in consistence, and about the size of a Jaffa orange. It was hardly possible to insinuate the finger between the tumour and the symphysis pubis. An unsuccessful attempt to aspirate its contents confirmed the solid nature of the tumour. From the abdominal aspect nothing was visible or palpable.

A week later, although urine was draining freely through the suprapubic catheter, it was apparent that intestinal obstruction was becoming more severe. Laparotomy was decided upon with a view to determining the nature of the tumour, seeing if it could be removed, and if not, then relieving the obstruction by colostomy. Through the abdominal incision it was found that the tumour filled the true pelvis almost completely. The rectum and pelvic colon were pushed forwards and to the left, and the latter was compressed at the level of the pelvic brim. The posterior parietal peritoneum (which was intact) was incised to the right of the pelvic colon and by blunt dissection the tumour was separated posteriorly down as far as the middle of the sacrum without much difficulty. Lower down it was firmly adherent to the bone, and it became obvious that it could not be removed. A small section was taken for biopsy. Little or no haemorrhage was encountered. Sudden collapse necessitated the rapid termination of the operation, and the baby died before it could be returned to the ward.

The pathological report, for which I am indebted to Prof. M. J. Stewart and Dr. R. M. Heggie, was as follows: "This is a highly malignant and embryonic teratoid growth arising from the intermediate cell mass. It is essentially adenocarcinomatous in nature and papillary in type. The exact origin cannot be stated."

Skipton. PHILIP H. MERLIN, F.R.C.S.Ed.

Reviews

AMERICAN MEDICINE

Textbook of Medicine. Edited by Russell L. Cecil. Sixth edition, revised and entirely reset. (Pp. 1,566; illustrated. 55s.) Philadelphia and London: W. B. Saunders Company. 1944.

This well-known American textbook now reaches its sixth edition, for which it has been revised and entirely reset. It has much the same arrangement as any other general textbook. It is printed in a type that is easily read, and throughout its pages are a judicious selection of illustrations. Many of the articles are accompanied by short lists of references to the literature. The writers of the various articles must find it difficult to know what to select from the vast literature that has grown round so many of the subjects dealt with, and there must be a natural tendency on the part of the contributor to favour references to his own work. As the writers are chosen for special knowledge of their subject this is inevitable, but we cannot help feeling a doubt about the usefulness of short reference lists: within the space allotted to them much that is important must obviously be omitted.

An attractive feature of this textbook is the inclusion here and there of short historical notes in small type—for example, the interesting historical note on scurvy, in which we are glad to see references made to Sir Thomas Barlow's description of infantile scurvy; but we find in the bibliography James Lind's *A Treatise of the Scurvy,* but not Sir Thomas Barlow's article in the *Medico-Chirurgical Transactions, London* (1883, **66,** 159). The complete omission of the names of Ronald Ross and Patrick Manson from the historical note on malaria comes as a surprise to the English reader, who will perhaps find this book of most value to him as an index to therapeutic methods in current American medicine. It is, for example, interesting to read in the section on the treatment of pneumonia that the use of sulphapyridine has been almost completely discontinued because of its toxic effects, and that the drug recommended in the U.S.A. is sulphadiazine. And of alcohol in the treatment of this disease it is observed: "The consensus seems to be that it should be administered only to patients who are chronic alcoholic addicts." The article on pneumococcal pneumonia is written by the editor, Dr. Russell L. Cecil, whose contribution to the discussion on serum treatment of pneumonia before the Section of Pharmacology and Therapeutics at the Centenary Meeting of the B.M.A. in London in 1932 will be remembered by those who attended: it was subsequently published in the *Journal* (1932, **2,** 657). On the efficacy of serum in the treatment of pneumonia he observes that it now seems to be of value in the treatment of patients who cannot tolerate sulphonamides, or who do not respond satisfactorily to sulphonamide therapy within 24 to 48 hours.

This textbook is well up to date, and includes, for example, references to penicillin, an article on virus pneumonia, and new introductory chapters on such subjects as the rickettsial diseases, diseases of metabolism, and diseases of the ductless glands. A useful feature is the 3½ pages at the end of the book giving a list of "normal values for clinical examination." Dr. Cecil's textbook is a great credit to American medicine.

VENEREAL DISEASES

The Venereal Diseases. A Manual for Practitioners and Students. By James Marshall, M.B., B.S. (Pp. 384; illustrated. 21s.) London: Macmillan and Co. 1944.

For some years now, and particularly during the war, venereal diseases have assumed ever greater importance, which is likely to increase after the war is over. With the advent of the sulphonamides and penicillin it seems likely that more and more cases will be treated by the general practitioner in the future. Hitherto the medical student has received little instruction in venereal diseases, and consequently the average general practitioner knows little about them. Up to a few months ago there was hardly a single textbook on the subject published in this country which was up to date; therefore the appearance of *The Venereal Diseases* by James Marshall, following closely on *Handbook on Diagnosis and Treatment of Venereal Diseases* by A. E. W. McLachlan (reviewed in this column on Aug. 12), gives the student and practitioner the choice of two excellent textbooks, to which they may refer for anything in connexion with V.D. which is not exclusively the province of the expert. Major Marshall needs no introduction—he is well known to many Londoners as ex-senior R.M.O. at the London Lock Hospital, and to Service medical officers as command specialist, Eastern Command.

The book is divided into four parts, dealing respectively with gonorrhoea, syphilis, other venereal and allied diseases, and technique; in addition there are appendices on sociology of V.D. and on special equipment, together with a short bibliography. The section on gonorrhoea is particularly good, and sound views are expressed on the use and interpretation of the complement-fixation test. The sulphonamides are handled skilfully, though it might have been well to stress the importance of fluid output rather than intake in the avoidance of haematuria; an intake which is sufficient in temperate zones will not be enough in the Tropics. The section on syphilis is necessarily curtailed by limitations of space, but is adequate; there are numerous excellent illustrations, and most of the coloured plates are beautifully produced, though a few are somewhat lacking in definition—e.g., Plate V. The treatment of early syphilis is the continuous type and is certainly thorough—the dosage is perhaps rather heavier than that commonly employed in this country. "Other Venereal Diseases" are rather crowded out; a fuller section on non-gonococcal urethritis would have been welcome, because not only is this condition becoming much more common, but it is often very difficult to cure. The practical instructions on technique are most valuable and will be very helpful to the general practitioner.

This is a book which can be recommended warmly; if the literary standards are hardly those of Mr. Winston Churchill, the meaning is clear, and the facts are set out with commendable accuracy.

HUMAN CONFLICTS

Foundations of Human Conflicts. A Study in Group Psychology. By William A. Brend, M.D., M.R.C.P. (Pp. 212. 15s.) London: Chapman and Hall. 1944.

The late Dr. William Brend as his last literary task produced a book of great interest not only to his own two professions of medicine and law but also to all those who are concerned directly or indirectly with the future planning of society.

If individual man is improving in intellectual capacity it would appear that in the mass he is not guided by reason but is swayed by childish emotions. Yet it ought to be possible to educate society, for instinct properly defined does not seem to exert much influence on the behaviour of the nations. The individual is strongly moved by directly experienced emotion; but the behaviour of the crowd is determined by propaganda, which uses indirect derived emotion, and this is much less honest. Certainly man tends to form himself into groups, but he does not do so as a result of the action of uncomplicated herd instinct. The group is formed and maintained as the result of emotion, not reason. This may be the direct love of a leader or cause, or the indirect hate of an imaginary or propaganda-clothed enemy. Unfortunately direct love, which should result in universal brotherhood, is less potent than indirect hatred, because in private life expressions of hatred tend to be suppressed by society, and so more readily come out in the mass. The chief modern groups are nations, but neither nationality nor race has any real logical existence, and a nation is only the population or area controlled by a ruler. Patriotism is not innate and is only a derived emotion established by education. Unlike science and knowledge, which have a universal appeal, patriotism is sectional and is the real enemy to peace. War is not due to an instinct of pugnacity or to mass sadism or to the evolutionary process or to divine displeasure; these explanations are mere rationalizations; even religious conflict is not primitive. It is increased by the identification of religion with patriotism, and so a State Church is often an evil influence, for it is associated with the ruling caste and so tends to promote class conflict, which, although softened and modified by tradition, is very intense even in Britain. There is also conflict between the young and the old, and, in the author's opinion, juvenile delinquency is most often due to frustration and rebellion against restrictions imposed by the old. So, too, in the matter of sex, there are too many restrictions; the author thinks that the age of consent is too high, and at 17 both sexes should be free to marry on their

own volition without having to obtain the consent of their parents. He thinks, further, that the natural healthy curiosity of children and desire to use the mind are stifled by modern education, which is concerned to instil religious emotion to promote the development of emotional loyalty and to ensure the perpetuation of established social institutions. The author's solution is the establishment of children's colonies for all over 9 or even younger, where there will be a minimum of discipline and compulsion. As to the fall of the birth rate, this is primarily due not to economic causes so much as to the postponement of marriage. Monetary grants are not the answer, but the promotion of earlier marriage and reform of the marriage and divorce laws. He would even favour the institution of temporary contracts, with State provision for children born of such contracts which did not become permanent. Finally, government should be founded on reason based on knowledge, and it must cease to further emotional and ideational conflicts for their own sakes.

Obviously many of the author's suggestions are provocative, but they are logically and lucidly presented, and even his opponents will gain much by reading his book, since if they are to refute his arguments they will have to put their own ideas into order.

Notes on Books

The second edition of Mr. EUGENE WOLFF'S *A Pathology of the Eye* (H. K. Lewis and Co.; £2 2s.) follows closely the arrangement of the first edition, reviewed in these columns on Jan. 19, 1935. The illustrations have grown from 124 to 212, without any substantial additions to the text. Room has been made for additional material by the deletion of some of the older matter, and the present volume is more consistently a textbook on the morbid histology of the eye than the original edition.

The last three editions of *Murrell's What to do in Cases of Poisoning* were prepared by Dr. P. Hamill, and the author of the new (fifteenth) edition is Dr. HAROLD G. BROADBRIDGE, coroner for the county of Middlesex Western District. The book can therefore be recommended to doctors as informing them what steps a coroner expects them to take when they are called to see a person who is poisoned. Further, they can prime themselves before attending an inquest with information which no coroner will be likely to question. The publishers are still H. K. Lewis and Co., and the price is 8s.

Preparations and Appliances

ILLUMINATED ELECTRODE FOR RETINAL DETACHMENT OPERATION

Mr. T. COLLYER SUMMERS, F.R.C.S., writes:

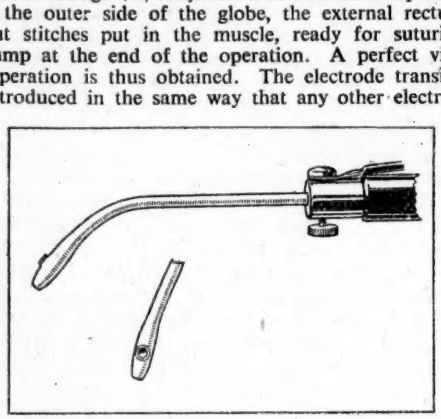
In introducing this method of dealing with retinal detachments that have posterior holes, I feel that it would be helpful if the steps which led up to the development of this operation were recounted.

In 1934, after having done detachments for some time, and having experienced late degeneration of the macula in some cases although the macula had never been detached, I came across the case reported at the Royal Society of Medicine by myself in which, before operation, only a 40-degree segment of the field was present, and this segment after operation was found to be very greatly diminished in sensitivity. This led me to think that macular degenerations and other field defects not explained after successful operations were due to the electric current used, and that more accurate location should be attempted than had been used up to that date. Various methods were tried to locate the hole more accurately, and the best of these was that introduced by Prof. Weve of Utrecht, in which the site of the hole on the sclera was shown by indirect ophthalmoscopy, the assistant then inking the spot so that the flat plate could be applied.

I then conceived the idea of finding the hole by transillumination, and designed a transilluminator, which, with the assistance and kindly co-operation of Messrs. Theodore Hamblin, was shown at the Ophthalmological Congress with other instruments. At that meeting I pointed out that the transilluminator had on one occasion shown the hole up perfectly, but that on subsequent occasions I had never been able to get it to work satisfactorily. It was considered at the time that, if it had worked once, the instrument could probably be so adapted that it would work in the future. The disadvantages of the transilluminator then in use were that it was too cumbersome and the light was too diffused.

A few months later Mr. Gray Clegg of Manchester designed an ideal transilluminator for the purpose, but for some months I was unable to obtain any successes with this instrument. The transilluminator which was being used was a perfectly naked light, and diffusion was so great that no details of the fundus could be accurately focused, let alone the edges of a hole. I accordingly suggested to Mr. Brown, of Messrs. C. Davis Keeler, who was using this apparatus with me, that ground glass be introduced into the Gray Clegg illuminator, and the result was an unqualified success. Holes at the macula showed up clear and sharp, quite as well by transillumination as by reflected light, and in one instance better. Having discovered that the hole could be seen, it was then decided to put an electrode round the light. This was done and the new instrument as seen in the accompanying sketch was devised and made by Messrs. C. Davis Keeler. In three cases this instrument has been used with success. The technique so far has been as follows for macular holes:

An incision through the conjunctiva and Tenon's capsule has been made on the outer side of the globe, the external rectus divided, and catgut stitches put in the muscle, ready for suturing to the scleral stump at the end of the operation. A perfect view of the field of operation is thus obtained. The electrode transilluminator is then introduced in the same way that any other electrode would



be, with the difference, of course, that the light is on. The theatre being dark, an old-fashioned Morton non-illuminated ophthalmoscope with the mirrors removed is then used to look through the pupil. When the light is seen to be opposite the hole, which is easily recognized, the edges of the tear being almost "lit up," the technician working the apparatus then switches on the current at 120 milliamperes for 5 seconds. So far I have not observed any definite swelling of the choroid. All that has happened is that the hole has become less distinct as the current has flowed. In the cases done so far two applications have been made so as to be sure that the hole was properly covered, whether necessary or not. Fluid was let out by the 2-mm.-thick diathermy needle and suction. The cases made satisfactory recoveries, with, of course, no standard of central vision.

The technique of using this instrument has not by any means been perfected. It is definitely not easy to handle in holes not far back from the ora serrata, as I have found it impossible to keep the light in position with one hand and hold the ophthalmoscope in a suitable position with the other. One great difficulty that has been experienced, and is still being experienced, is that the patch of illuminated retina is so small that it is very difficult to find. It is important, before applying the transilluminator, to make quite certain that the sclera is dry and free from blood. This has been achieved up to now by packing off the area with stryphnon swabs.

This method is introduced as one which, when perfected, might be much better and more accurate than those used at present.

"SYNAPOIDIN"

Messrs. Parke, Davis and Co. have recently prepared for sale "synapoidin," which is a gonadotrophic preparation containing both chorionic gonadotrophin and the gonadotrophic hormone obtained from the anterior lobe of the pituitary. In animals it exerts both follicle-stimulating and luteinizing effects, and it is standardized in terms of the amount required to increase the weight of the ovaries of immature rats five-fold. It is used for the treatment of sterility when there is no physical reason, and also for the treatment of amenorrhoea, even of long duration. It seems doubtful whether the simultaneous administration of both the follicle-stimulating and the luteinizing hormones can achieve the best result in sterility. A more rational method would seem to be to inject the follicle-stimulating hormone (obtained from pregnant mare's serum) from the 5th to the 15th day of the cycle, and then to give chorionic gonadotrophin for the next 10 days when the luteinizing effect is wanted. This has been done with promising results in America by E. C. Hamblen and others. It will be interesting to discover whether the use of "synapoidin" is equally successful. It is a potent preparation to be used with care.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY JANUARY 13 1945

LOCAL GOVERNMENT BOUNDARIES

It is a very cautious exercise in reconstruction which is presented in the new White Paper on Local Government in England and Wales.[1] If any time can be more suitable than another for recasting local authority structure it is surely at the end of a war during which a great deal that was traditional and established has already been superseded. A time also when tasks are being thrust upon local government—the replanning of bombed cities; housing, in many areas on an immense scale; educational provisions under the recent Act, and the projected National Health Service—seems to offer occasion for a survey of existing machinery, scrapping the obsolete and installing new. But the White Paper, which is the result of discussions between the Ministry of Health and the Associations of Local Authorities, contains only one recommendation—the setting up of a Boundary Commission. This will do little more—though it will certainly do it with a national perspective—than county councils in association with the Ministry can do at present in readjustment of areas.

Those who expected to see radical changes which would make the administrative map of England unrecognizable, with perhaps a dozen regions, analogous to the Civil Defence regions, in place of half a hundred counties, and the creation of large single cities to cover such "conurbations" as the Tyneside towns, will be disappointed. Even the urgent problem of London, where the county contains less than half the population of what may be called the metropolitan region, is immured from present change, although an inquiry is promised. Neither London nor Middlesex, which is a county entirely urban, without any rural districts, is to come within the ambit of the Commission.

The Government is opposed to the centralization of services hitherto accepted as local. It is opposed also to regional administration, against which, apparently, the local government associations expressed themselves unanimously. It is held that whatever changes are necessary can for the present be carried out within the framework of the existing county and county borough system. What George Borrow called the "genuine spirit of localism" is to be preserved. The existing pattern of local government is held to have justified itself, especially in the supreme test of war, though whether this result is due to the energy and enlightenment of the administrators or to the excellence of the fabric is an open question. Local government has always enlisted a vast amount of public-spirited service, often stimulated by the political feeling so marked in many towns. It has proved an excellent school for administrators, many of whom—outstanding names in this and the last generation will come to mind—have graduated from local councils to the highest places in national government. The White Paper assures us that there is no ground for any fear that the work of democratic local government will diminish. On the contrary, it seems as if the State must delegate more of its multiplying responsibilities to local bodies.

Local government areas can never be arranged quite like the squares of a chessboard, but there could be very much better concentration of authorities and readjustment and simplification of areas, with the joining up of poor areas to neighbouring richer ones so that inequalities in the standard of provision might so far as possible be redressed. It is true that there is not now the chaos to which Mr. Goschen called attention sixty years ago: a chaos of jurisdictions, rates, franchises, and areas, with 27,000 independent local authorities taxing the ratepayers by eighteen different kinds of rates. But since 1888, and even since 1929, social change and the growth of industry and locomotion have made many boundaries irrelevant. Large cities, if their municipal transport was restricted to their boundaries, would be unable to serve their own housing estates. On Tyneside the houses are continuous throughout the areas of sixteen local authorities, which authorities, incidentally, have, or had before the war, eleven separate hospitals for infectious diseases.

Under the present system county boroughs are responsible for all local government services in their areas; in the administrative counties the responsibility is shared between county councils and councils of non-county boroughs and of urban and rural districts. But county boroughs range in size from Birmingham with its million population to Canterbury with its 25,000, and the population of administrative counties varies within similar extremes. Conditions, moreover, are constantly changing, with growth and transfer of population and industry. A river or range of hills which was a natural boundary, and still is an administrative one, may become not so much a partition between communities as a spine holding them together. Numerous small boroughs with ancient charters have limits as closely fixed as a walled town of the Middle Ages, but modern transport has made large surrounding rural districts in many respects a part of the town and the town a part of the country.

The need for overriding the frontiers in order to bring most economically certain services to the community is recognized in the idea of joint authorities for planning or executive purposes. The objections to joint boards are, first, that they are not directly elected bodies, and, secondly, that the multiplication of *ad hoc* authorities is undesirable. The White Paper states that the Government does not underrate these objections, but it still holds that, as against centralization or regionalization, the method of joint authorities is to be preferred as a means of obtaining combined action where a co-ordination of services between two or more areas, whether counties or county boroughs, is necessary. The White Paper on a National Health Service proposed that, particularly for hospitals, larger areas of local administration than at present exist should be placed under the control of joint boards. It stated (Appendix C) "that the need to settle areas of proper size and resources for certain aspects of the service

[1] Cmd. 6579, H.M. Stationery Office. (4d. net.)

is urgent and that (temporarily at least) the joint board seems to be the only practicable means of doing this." In his recent statement to the Representative Body of the B.M.A. the Chairman of Council said that since the issue of the White Paper the joint board had rather faded from the picture. But it fills the frame in this new White Paper, and although the "specific purposes" are "housing, water supply, and so forth," hospitals are implied, because earlier in the Paper it is mentioned as an argument of those who want to recast the whole local government system that hospital services need to be planned, and in some cases administered, over a wider area than a county or county borough.

As already stated, the only recommendation is the establishment of a Boundary Commission, an itinerant and executive body, whose task it will be, by holding local inquiries, to ensure that local government units are of such size and shape and have such financial resources as to provide a satisfactory administration. It will have power to create and extend county boroughs and to reduce the status of small county boroughs and counties by uniting them with contiguous ones. It will also bring to the notice of the Minister any case in which a combination of authorities for particular purposes is desirable.

The special problem of London is left over for the time being, pending inquiry by an authoritative body. Middlesex also is left in the air. If the Commission began to create county boroughs in Middlesex it might cover the whole county with them, and destroy county government. How closely bound are the counties of London and Middlesex is instanced by the Hammersmith Hospital, to which the British Postgraduate Medical School is attached. It is administered by the L.C.C., but is at the western extremity of the county, and Middlesex is its "catchment area." The reason given why the present time is thought not opportune for extending the boundaries of the County of London is that the tasks upon which local authorities in and around London are and will be engaged in recasting their services should not be interrupted by throwing the whole problem into the melting-pot. It is extraordinary what different conclusions different minds will draw from the same premisses. Many would argue that the very fact that these tasks—the new health service, for example—are imminent calls for a reconstruction of the system in advance. There should be new wineskins for the new vintage; otherwise the skins may burst and the wine be spilt.

CHEMOPROPHYLAXIS OF RESPIRATORY INFECTIONS

The value of small doses of sulphonamide drugs in controlling the spread of infection by a sulphonamide-sensitive organism has been tested in more than one direction lately. Sulphonamide therapy is particularly effective against the meningococcus, and during the epidemic of cerebrospinal meningitis in 1940–1 it not only cured the clinical infection but also eliminated the meningococcus from the nasopharynx of affected patients and of contact carriers. It was therefore a logical step to use it for preventing the spread of infection in Army training units where the occurrence of clinical cases of cerebrospinal meningitis together with a high meningococcus carrier rate indicated the likelihood of further trouble. This has been done in more than one American camp, and the remarkable fact has been established[1] that a dose of 1 g. of sulphadiazine twice daily for two days will bring an outbreak of cerebrospinal meningitis to an abrupt end. Outbreaks of streptococcal tonsillitis and pharyngitis, with sometimes a high incidence of acute rheumatic fever in their wake, have been prevalent among both Navy and Army recruits in training units in the U.S.A., and the successful prophylactic use of sulphonamides in preventing rheumatic relapses through the winter months encouraged American workers to try the same methods for controlling respiratory, in particular streptococcal, infection in these training camps. Two recent reports show what measure of success has been attained. Holbrook[2] tested the effect of sulphadiazine in doses of 1 to 2 g. daily for short (2 to 3 days) and longer periods (up to 3 months) on the hospital admissions for respiratory infections among American Air Force personnel. He reported reductions in incidence of 50% to 75%. It was stated that about 50% of the admissions ordinarily showed clinical and laboratory evidence of streptococcal infections. Reactions due to the sulphonamide were rare. In a specially studied group of 40,000 men, only 13 (0.03%) lost time off duty, mostly with skin rashes developing within 1 to 16 days of starting the drug; two patients who developed febrile reactions gave a history of previous sulphonamide-sensitivity; one case of haemolytic anaemia responded promptly to blood transfusion. Coburn,[3] who indicts the streptococcus for the heavy toll it has taken in American naval establishments, also claimed that sulphadiazine in 1-g. daily doses could dramatically reduce the incidence of respiratory infections. For example, in one unit where "catarrhal fever," tonsillitis, scarlet fever, and acute rheumatism were all rife a sharp drop in the monthly incidence of respiratory infections from 150–200 to 20 per 1,000 men followed the introduction of sulphonamide prophylaxis in February. In another camp alternate companies were given 0.5 g. sulphadiazine daily from November on, and the subsequent incidence of cases requiring hospital treatment for respiratory infection was three times greater in the control than in the treated group. Proven clinical streptococcal infection in the control group was 24 times greater, and probable streptococcal infection (positive throat culture) 11 times greater, than in the treated group. Coburn believes that short sulphonamide courses lasting a few days are inadequate to prevent further recrudescence by checking the spread of streptococcal infection.

The possible dangers from sulphonamide prophylaxis are the induction of sulphonamide-sensitivity in the patient, the occurrence of disabling and even fatal sulphonamide reactions (toxic or allergic), and the development of drug-fastness in respiratory pathogens. With regard to the first of these risks, Holbrook and Coburn found that men put on repeat prophylactic courses showed no greater incidence of sulphonamide reactions than other groups. Coburn reported an incidence of drug reactions between 0.2% and

[1] Kuhns *et al.*, *J. Amer. med. Ass.*, 1943, **123**, 335.
[2] Ibid., 1944, **126**, 84.
[3] Ibid., p. 88.

0.7% in all "treated" groups, mostly mild skin rashes during the second and third weeks of prophylaxis. Severe reactions—exfoliative dermatitis and granulocytopenia—occurred in 0.01% of cases. The one death in his series was ascribed to leukaemia. The production of drug-resistant strains of the haemolytic streptococcus and the pneumococcus would theoretically appear to be the greater danger. However, without producing bacteriological evidence, Coburn contends that this did not happen among his "treated" groups because (1) there was no increase of any one serological type of streptococcus during prophylaxis; (2) the streptococcus did not supplant other bacteria in the throat flora; (3) streptococcus morbidity was uniformly reduced in incidence; and (4) "treated" patients who afterwards developed streptococcal infection responded well to sulphonamide therapy. But it would be unwise to be too sanguine about this possible danger. Sulphonamide-resistant streptococci have already been observed to spread in wards where open wounds[4] and measles patients[5] were being treated with the drug, and more careful investigation of this hazard is needed.

At the moment it seems reasonable to recommend sulphonamide prophylaxis for the control of outbreaks of meningococcal and streptococcal infection, and for the prevention of rheumatic relapses. For the first of these the effective dosage of 2 g. daily for 2 to 3 days is practically without risk for the community unless there are persons in it already sensitized to the drug; for the second, a dosage of 1 g. daily would have to be continued for perhaps 3 to 4 weeks, when sensitivity is likely to show itself; for rheumatic fever prophylaxis must be continued throughout the winter. Sulphanilamide in doses of 1 to 2 g. daily has been the drug of choice, and the latest American report[6] (which also summarizes earlier work) is encouraging as regards both prophylaxis and the minimal occurrence of toxic drug reactions. Thus among 88 rheumatic patients "treated" for 181 patient-seasons there were only 5 streptococcal infections (2.7%) and 2 rheumatic relapses (1.1%), whereas in the control group of 107 patients observed for 138 patient-seasons there were 54 streptococcal infections (39%), and 19 definite plus 7 mild or possible rheumatic relapses (19%), with 3 deaths. Sulphonamide prophylaxis for the rheumatic patient may be risky, but it is justifiable.

TREATMENT OF "WOUND SHOCK"

The Medical Research Council has just published a revision of its practical memorandum[7] on the management of wound shock. The document gives an impersonal digest of practical views reached as a result of five years' observation and research. It is now realized that shock is a complex state resulting from a multiplicity of causes, but most often from haemorrhage. For this reason the word "shock" is enclosed in inverted commas throughout the document. The sequence of events in haemorrhage is carefully described, and thereafter other causal factors, such as burns, crushing injuries, infections, and fat embolism, are outlined. On the basis of this logical presentation the treatment is described. All along the line practical advances call for comment. The frequency and importance of vaso-vagal collapse after blood loss are stressed: this condition is characterized by a slow pulse and a fall of blood pressure due to dilatation of muscle arterioles, as shown by the workers at the British Postgraduate Medical School.[8] New views on burn shock and on crushing injuries emanate from the M.R.C.'s units in Glasgow and Newcastle. The factor of tissue trauma studied by the Sheffield group[9] is mentioned, and the importance of early removal of injured tissue is emphasized. All these parts of a wide field of research endeavour have been welded together into a practical and simple exposition by a committee including senior leaders of proven wisdom as well as such field observers as Prof. W. C. Wilson and Dr. R. T. Grant. Transfusion remains the key to treatment in the majority of cases, and the importance of transfusing until the blood pressure is normal is stressed. The place of serum and plasma infusions is carefully defined, and useful practical details are given, especially for their employment in burns. There is now less insistence on oxygen administration, and overheating is considered dangerous. An alkaline diuresis may prevent but not cure the anuria which results from crushing injuries. (A misprint here of ounces for drachms.) The great number of possible blood substitutes from isinglass to bovine albumin are wisely omitted from discussion. For use in civilian work a few words might have been added on the harmful vasodilatory influence of alcohol in cases of street accident.

There still remains much work to be done on the reactions of the body to injury. The changing outlook may well be outlined by dissecting Harkins's[10] pithy definition of shock as "progressive vasoconstrictive, oligaemic anoxia." While acute oligaemia certainly produces a common form of "shock," the Postgraduate School workers[11] have demonstrated that low blood volumes often occur in severe anaemia with a high cardiac output. Oligaemia as such can therefore be compensated by a series of reactions as yet unstudied by laboratory physiologists. Vasoconstriction was thought to be a constant feature of "oligaemic shock." But the occurrence of "vasovagal" vasodilatation after haemorrhage now makes the general accuracy of this concept doubtful. The multiple factors at work in an injured man may produce vasodilator reactions more often than has been imagined. Tissue anoxia from poor blood flow, accepted as part of the shock story a few years ago, now seems to be ill understood. Frank and Fine[12] have shown that oxygen administration, even at a pressure high enough to compensate for sluggish blood flow, will not bring about recovery in "shocked" dogs. Are parts of the circulation completely shut down, as Rous and Gilding[13] observed, so that the extra oxygen supply does not get to the parts where it is needed?

It is to be hoped that these problems will be closely pursued, for their solution may reveal new physiological mechanisms of fundamental importance. Much work on oxygen lack and cardiovascular reactions to it has been done in the Air Force under a cloak of secrecy. Is it necessary to keep this information so closely guarded any longer? Perhaps some of it may provide much-needed clues for those struggling with the problem of death from trauma in which no vital organ has been directly involved.

[4] Francis, A. E., *Lancet*, 1942, **1**, 408.
[5] Wright, Cruickshank, and Gunn, *British Medical Journal*, 1944, **1**, 611.
[6] Dodge *et al.*, *J. Pediat.*, 1944, **24**, 483.
[7] M.R.C. War Memo. No. 1 (second edition), London, H.M.S.O., 1944, price 6d. net.
[8] Barcroft, H., Edholm, O. G., McMichael, J., and Sharpey-Schafer, E. P., *Lancet*, 1944, **1**, 489.
[9] Green, H. N., ibid., 1943, **2**, 147.
[10] *Surgery*, 1941, **9**, 231.
[11] McMichael, J., Sharpey-Schafer, E. P., Mollison, P. L., and Vaughan, J. M., *Lancet*, 1943, **1**, 637; Sharpey-Schafer, E. P., *Clin. Sci.*, 1944, **5**, 125.
[12] *J. clin. Invest.*, 1943, **22**, 305.
[13] *J. exp. Med.*, 1929, **50**, 489.

HERPES ZOSTER

Recent interest in herpes zoster has been focused upon aetiological and bacteriological aspects, and it is now commonly accepted that the condition is due to a filterable virus related to, if not identical with, that of varicella. It is also generally believed that the virus causes inflammatory changes in isolated spinal or cranial sensory ganglia, the posterior grey matter of the spinal cord and adjacent leptomeninges, and that these lesions account for the well-known clinical manifestations of a vesicular cutaneous eruption, radicular neuralgia, segmental palsies, and sensory disturbances. The main pathological features of herpes zoster were discovered in 1861 by von Bärensprung, who gave such a plausible account of the condition that later generations tacitly assumed that his anatomico-pathological observations provided a satisfactory basis for the clinical syndrome. It is for this reason that a recent paper by Denny-Brown, Adams, and Fitzgerald[1] deserves general attention, as the authors set out to expose the inadequate evidence for views widely accepted and sanctioned by tradition. On the strength of their investigations they are led to assume that the clinical phenomena of herpes zoster require more than a ganglionic lesion for their explanation, and depend, in part at least, on a poliomyelitis involving the anterior horn cells and an independent motor neuritis. Likewise, the combination of a herpetic eruption in the external auditory meatus and palsy of the facial nerve, known as the "Ramsay Hunt syndrome" or "geniculate herpes," cannot be explained by the affection of a cranial ganglion alone, but presupposes an independent motor neuritis of the facial nerve. It is historically interesting to note that the geniculate ganglion from which the name of the syndrome is derived was not found involved in the case of Denny-Brown and his associates. There is, however, some suggestion, though not yet any definite evidence, that in the Ramsay Hunt syndrome the ganglia of the vagal and glossopharyngeal nerves may be affected.

TENSION IN TUBERCULOUS CAVITIES

The treatment of large, thin-walled, spherical tuberculous cavities in the lung, commonly called "tension" cavities, has aroused much discussion, because these lesions often fail to respond to the usual collapse measures. The pioneer work of Coryllos helped to explain the mechanism by which such cavities are formed, and Monaldi gave us a new method of attacking them when he described his technique of suction drainage. A recent contribution by Vineberg and Kunstler[2] to the rapidly growing literature on this subject voices a plea for careful differentiation between true tension cavities and others which, though radiographically similar, do not have a positive pressure within them. These authors state that drainage is often applied to any large cavity without differentiation, though in this country the work of Price Thomas,[3] Sellors,[4] and Maxwell and Kohnstamm[5] has pointed the way clearly to the correct use of this treatment.

After a useful survey of the literature Vineberg and Kunstler give a clear account, supplemented by useful diagrams, of the mechanism by which tension cavities are produced. In the bronchus draining such a cavity a valvular obstruction allows air to enter but not to escape from it; the usual collapse measures, such as pneumothorax or thoracoplasty, will therefore often fail to close a tension cavity—it continues to be inflated in spite of adequate collapse of the surrounding lung. But, as Price Thomas has pointed out, the collapse will sometimes alter the mechanics of the draining bronchus in such a way that it becomes completely obstructed, and the cavity then closes. Vineberg and Kunstler believe that all tuberculous cavities with a diameter greater than 2.5 cm. should be needled before any other treatment is undertaken. If the pressures in the cavity are persistently positive it should be treated in the first instance by closed drainage with the Monaldi technique, followed by continuous suction. These authors state that giant cavities, which might be called tension cavities simply from their *x*-ray appearance, are really of two types—true tension cavities, and others in which the intracavitary pressures are normal, showing that there is no valvular bronchial obstruction. The latter respond well to the usual collapse measures, whereas the tension cavities do not; hence the importance of ascertaining the pressures within the cavity before starting treatment.

Continuous suction drainage will often reduce the size of a tension cavity until it is no more than a tube-track, but Vineberg and Kunstler agree with Sellors that permanent closure can rarely be obtained by drainage alone. When the suction has done its work it must be followed by thoracoplasty to ensure complete healing, but a very limited thoracoplasty is often enough to achieve the desired result. In the case of certain giant tension cavities closely adherent to the chest wall, Vineberg and Kunstler state that an anterior-stage thoracoplasty before drainage will give sufficient relaxation to allow the cavity to contract; this is followed by a posterior-stage thoracoplasty when drainage has reduced the cavity to a minimum. These authors also report that, for the purpose of taking pressure readings, they have needled 150 cavities without any complication. The depth of the cavity was determined by tomography in each case, and they took great care always to obliterate the pleural cavity at the site of the puncture, and to avoid air embolism. In a small series of 25 tuberculous tension cavities treated by suction drainage, supplemented by thoracoplasty, rather more than half were closed successfully.

"A HOUSE OF BOOKS"

In 1931 Messrs. H. K. Lewis and Co., Ltd., medical librarians, publishers, and booksellers, opened their rebuilt and enlarged premises adjoining University College, London, at the corner of Gower Street and Gower Place. The year 1945 sees the completion of the centenary of that firm, so well known to the medical profession. Henry King Lewis started business in 1844 at what was then 15, Gower Street North, afterwards to be known as 136, Gower Street; the actual date cannot now be traced, but it was towards the end of the year. Mr. H. L. Jackson, nephew of the founder of the firm, whose own association with it dates back for 56 years, has for some time been preparing a short account of H. K. Lewis and his work as a publisher and bookselier, and of the later growth of the business. This book, when published, will fittingly mark the hundredth anniversary, though formal celebration of the event must wait until after the war. Mr. Jackson succeeded Mr. E. J. Sowerby as chairman of the company 20 years ago, and many readers will be glad to know that notwithstanding wartime difficulties and anxieties he continues as governing director. No one now living can tell when the cordial relations began between "Lewis's" and the B.M.A. and its *Journal*, but it is a very old comradeship in the service of medicine.

[1] *Arch. Neurol. Psychiat.*, 1944, **51**, 216.
[2] *Surg. Gynec. Obstet.*, 1944, **78**, 245.
[3] *Brit. J. Tuberc.*, 1942, **36**, 4.
[4] *Tubercle*, 1942, **23**, 239.
[5] *Brit. J. Tuberc.*, 1943, **37**, 24.

SIGHT-SAVING CLASSES

BY

N. BISHOP HARMAN, M.B., F.R.C.S.

In a leading article in the *Journal* of Oct. 21, 1944, entitled "Partially Sighted Children" there is an excellent account of Mrs. Winifred Hathaway's well-written book on the experiences of American educationists of sight-saving classes. Her figures show that there are 630 of these special classes in 31 States. This indicates how keen has been the development of this special provision for children with defective sight; but the fact that there are still some 50,000 children who are held to require it leads to a question addressed to me—namely, What are the technical requirements and potentialities of the school for the partially sighted?

All work of these sight-saving classes has been of interest to me, and I think I can do well for them by showing how they came into being. Early in this century there was no provision for the care of the eyesight of children in the increasing number of elementary schools established under the Act of Parliament of 1871. There were fine new school buildings in London; they were full of children. The teaching was good. But no one thought of the eyes of the children until Dr. James Kerr became medical officer of the Education Department of the L.C.C. When I heard it was proposed to appoint some of us young eye men to go to the schools and test the eyesight of the children I went to see him, and he allowed me to join in the work. I felt that this experience among the children of our great city would have an interesting reflection upon hospital work; I should then see the healthy as well as the sick. I was given a fine area of schools, of which Hackney was the centre. About half a dozen started this work all over London, and we spent three half-days a week at the schools. I found it of great interest in that it showed me the variations in eye health in different social conditions. I may say that at first the school teachers were hostile to this new form of school examination, but they soon learned the advantage of it.

Children's Eyesight Forty Years Ago

My Hackney district included good residential quarters in Clapton, artisan dwellings in Homerton, and crowded slum regions in Bethnal Green. In five months of one year I examined 21,893 children aged from 7 to 13. I classified my records as I judged the living conditions of the regions, and found these figures[1]:

Cleanliness	Cases of Eye Disease	Percentage
Above average	19 in 2,174	0·873
Average	134 in 9,463	1·416
Below average	197 in 10,256	1·92
Totals	350 in 21,893	1·59

The first distinctive point I noted in examining my returns was the preponderance of poor sight among the girls. That was shown clearly in Dr. Kerr's L.C.C. report in 1903 of 20,000 children, of whom rather more than half were boys. Of this group 481 boys and 617 girls had only 6/12 vision, and 645 boys and 882 girls failed to reach that mark. More than 57% of the children with poor or bad vision were girls. I reported: "This excessive incidence among the girls was in part due to the fact that the boys played about in the clean wide street [there were no motors then!], sharpening their wits and their physical reactions, while the girls were kept at home to help in domestic duties." And again: "The other part is the nature of the work done in the schools. Girls do finer work, boys do no needlework. So that in vision testing boys had an advantage, for their accommodation muscles were in a better state of tone on account of their outdoor life, and at the same time they are less fatigued by their school work."[2]

Soon I was directed by Dr. Kerr to examine all the children in the blind schools; there were 400 of them. I was shocked to find among the really blind children some who were not blind. These were the highly short-sighted or myopic children. Most of them were not blind at all. At their own distance they could see minute objects, and mentally they were as keen as any school-children. These high myopes were taught to write and read Braille, the blind print of minute humps made in paper. As I watched them (from a place where they did not see me) I saw that they read this Braille with their eyes and not with their fingers. To a person with sight Braille is harder to read than black print of fair size.

I submitted my records of all these children to Dr. Kerr, and suggested that there was good reason to set up special classes for the partly sighted children, for they had no place in the blind school. This was bad for them, and their presence upset the really blind. He agreed with my suggestion. I put the proposition before the International Congress on School Hygiene in 1907, and, happily, Miss Nettie Adler, a member of the Education Committee of the L.C.C., was in the chair at this meeting.[3] She was convinced of the rightness of the suggestion, and in a few months I was given a place where I might start the first of these classes. In a fine school in Camberwell with a wide playground there was a separate small building with two classrooms. This was the first place for these classes. Again, there was at first an unpleasant reaction by the teachers to these "new classes" in their ground, especially as the programme of work I endeavoured to obtain included them. But soon they became as keen on the service as our two special teachers.

The First "Special" Classes

The scheme of work laid down for these classes was as follows[4]: (1) Oral teaching with the normal children for such subjects as could be taught orally. (2) Literary work, such as is necessary for the knowledge of the ordinary means of communication, to be learned without books, pens, or paper, but by the use of blackboards and chalk, the writing to be done free-arm fashion. (3) A full use of every sort of handicraft that would develop attention, method, and skill, with the minimum use of the eyes.

The classrooms must have brilliant daylight; when artificial light was needed all work, other than physical exercises, oral lessons, or games, was suspended. The rooms were fitted all round with blackboards in such a position that they could be used by both teacher and children. Each child had a special desk, the top of which was flat for use in hand work, but could be lifted, giving a blackboard for the child at arm's length on which class-work could be done with chalk. For children in the higher standards some permanent record of work was needed. Exercise books were of a novel pattern, being made up of large sheets of black paper, and the writing was done with white crayon, which gave a record of fair durability but could be washed off if desired. Physical exercises entered largely into the time-table, and attempts were made to associate games with instructional work. For example, large sheets of scenic canvas were supplied to schools that had sufficient floor space, and on these the teachers painted outline maps of different countries, marking out the position of cities, rivers, etc.; the children walked about on these floor maps learning their geography by travelling in imagination. With a teacher of resource there was much interest in this.

The most difficult section of the work was manual training. Whatever work was chosen it did not have to demand fixed attention of the eyes. All sewing was prohibited, but knitting was good. For smaller children paper-folding, stick-laying, felt-weaving in colours, and some knitting were useful. Seniors were taught to do basket work. Boys did bent iron work, and girls were taught cookery and laundry. The teaching of these handiworks was in something like the position of Latin in our own public schools. Latin was later little or no use to us; so with some of these handicrafts. But with each type of child the teaching had the direction of training in care, precision, and control. Later, a long list of suitable occupations (twenty-six forms) was drawn up. The best work was that which allowed the child to be out and about, standing and moving, with a minimum of close-eye attention. Hand work was found to be of great value, for it removed them from living in a world of reading and "book-thinking."

Soon there were many of these classes both in London and in the Provinces. They became very popular in the United

States, and it was from there they got their name of sight-saving classes. Our law recognized only schools for the blind and partially blind; to have called them "partially-blind schools" would have been disastrous. Parents would have been shocked and hostile. So we called them "myope classes." Most of the children were true myopes, but there was a percentage with scarred eyes from natal defects, from disease after birth, and from injuries. The name served well until we heard "sight-saving classes," and that became an attraction to the parents. In a paper read before the Section of Ophthalmology of the Royal Society of Medicine in 1913[4] I gave a full account of the work of these classes, and it included six pictures of the school work and equipment. As the number of children found to have defective sight—so defective that they were unfit for the normal school and too good for a blind school—increased with years it became difficult to link these classes with the normal school. So that this distinct benefit had to be given up. Schools for myopic children were established in appropriate regions.

Potentialities of Schools for Myopes

Now comes my attempt to answer the main part of the question in the leading article in the *Journal* already referred to. What are the "potentialities of the school for the partially blind"? To my mind the answer to that question is to be found in the records of the variation in the sight of boys and girls in the normal schools. I have given figures showing that the eyesight of girls was at least 10% worse than that of boys. This cannot be explained except by the differences in the lives and work of boys and girls in school years. If this difference be true for "normal" children, it must also be true for children of poor sight, especially for high myopes, whose eyes have an unnaturally soft sclerotic coat and a torn choroid about the optic disk. They have a short point of clear vision; this makes convergence excessive and so squeezes the eyeballs and increases the tendency to an elongation of the eyeglobe, and brings an increase of the myopia.

There is an ancient proverb: "Train up a child in the way he should go, and when he is old he will not depart from it." There can be no doubt that if we teach these partially sighted children how to use their eyes with intelligence they will carry on with the training that we give them after school years. It is difficult to obtain evidence of the effect of this training in school cases or even in hospital cases, for the years through which we see these persons are so few, but I have had ample evidence of the good reaction to training in private patients who have been seen over many years. At one time I was able to collect evidence from the histories of 480 myopes of more than 3D. Of these 183 were engaged in various occupations involving habitual close eye work—e.g., clerks, seamstresses, compositors, etc.—and 297 not so engaged. The comparison was summarized in a table I gave to the Government Committee[5]:

Type of Patient	Number	Breakdowns	Damage to Eyes	Total of Failures
Habitual close eye workers	183 (100%)	70 (38·2%)	27 (15%)	97 (53%)
Others	297 (100%)	7 (2·4%)	21 (7·06%)	28 (9·4%)
Total percentage in 480	100	16	10	26

The higher total of the second section is accounted for by the number of married women among them, and it includes most of the very high myopes who were unable to do close work. Of the 53% of the close workers whose sight failed at some time of their career no less than 15% sustained permanent damage through loss of an eye. Two persons lost both eyes.

I have had three opportunities of ascertaining the reaction to these sight-saving classes in other and wide areas of the world. In 1930 I crossed Canada to the far west, and in 1935 crossed the United States of America to the Pacific, and in these journeys I saw many eye doctors; all were keen on this part of their work. Again, in 1932 there was a meeting of the Association Internationale de Prophylaxie de la Cécité in Paris. There I read a paper on "Sight-saving Classes,"[6] and the discussion with the ophthalmologists from all countries was most interesting. Those of certain countries on the continent of Europe regretted that the arrangements in the normal schools were not elastic enough to allow a full development of these classes, but they said they were striving to get more of them established.

I therefore hope the sight-saving classes will continue to do their good work for the partially sighted children, for I feel sure that they will save many of our fellow citizens from the loss of their precious sight and from the misery of blindness.

REFERENCES

[1] *The Conjunctiva in Health and Disease*, 1905, London.
[2] "The Effects of School Life upon the Vision of the Child." *Proc. roy. Soc. Med.* (Section of Diseases of Children), 1909, **2** 206.
[3] *Second International Congress on School Hygiene*, London, 1907, p. 794.
[4] "The Education of High Myopes." *Proc. roy. Soc. Med.* (Section of Ophthalmology): 1913, **6**, 146.
[5] Ministry of Health Departmental Committee on the Causes and Prevention of Blindness, 1922, London, p. 53.
[6] *British Medical Journal*, 1933, **1**, 129.

NEW BRIDGE-HEADS FOR ATTACK ON CANCER

EMPIRE CANCER CAMPAIGN REPORT

The twenty-first annual report of the British Empire Cancer Campaign, under the able editorship of Mr. J. P. Lockhart-Mummery, again embodies brief accounts of research work or clinical investigation from about forty hospitals, laboratories, research departments, branch councils, affiliated organizations over-seas, and individual workers. Thanks to the continuing support of the public, notwithstanding so many other claims, the Campaign has been able to allocate nearly £40,000 for research in 1945.

Carcinogenic Agents

Much work proceeded during the last year on the elucidation of the way in which carcinogenic agents act and on the discovery of fresh agents. Thus in the department of pathology, University of Sheffield, progress has been made in explaining the remarkable tumour-producing properties of the compound 2-acetyl aminofluorene. It is now thought probable that the tumours are due to interference with liver function. It has also been possible to localize the carcinogenic action of acetyl aminofluorene to sites not usually affected. Thus both benign and malignant tumours of the thyroid gland have been obtained by the combined action of acetyl aminofluorene and allyl-thiourea.

Several departments have been working on the special properties of benzpyrene. In the cancer research laboratory of the Royal Victoria Infirmary, Newcastle-upon-Tyne, epidermal tumours have been produced in mice by a single application of this substance if the skin has been treated afterwards with some agent, itself non-carcinogenic, which causes epithelial proliferation. The existence of a sensitizing factor in the genesis of tumours is suggested, and it is pointed out that if the same holds good for human pathology, hyperplasia may prove to be a factor of high importance in determining the occurrence of tumours in man.

Work carried out at the Sir William Dunn School of Pathology at Oxford makes it possible to define more closely the relationship between chronic irritation and the onset of cancer. There appears to be little danger of a simple irritant producing a tumour or even a pre-neoplastic lesion by itself, but if a pre-neoplastic lesion has developed, then the subsequent development of a tumour at that site may be facilitated by the action of a non-specific irritant.

An interesting experiment under the auspices of the Marie Curie Hospital indicates that a subline of a high-cancer-incidence strain of mice which had itself lost the power of developing mammary tumours spontaneously may nevertheless transmit this power through the milk factor to a low-cancer strain, showing that the loss of power in the substrain to develop mammary tumours is due not to the milk factor but to a mutation.

Advances in Chemotherapy

At the annual meeting of the Campaign a year ago Prof. E. C. Dodds mentioned Huggins's claim that carcinoma of the prostate gland can in many instances be checked by administration of the synthetic oestrogen known as diethyl-stilboestrol. It has now been confirmed that such cases can be rendered symptom-free and so maintained for long periods. A report from Middlesex Hospital states that a large series

of cases of carcinoma of the prostate are now under treatment with various doses of the three synthetic oestrogens—stilboestrol, hexoestrol, and dienoestrol—and the clinical and *x*-ray picture and other indications are being closely watched.

Some work has also been done at the Royal Cancer Hospital, London, and at the Christie Hospital and Holt Radium Institute, Manchester, on the treatment of cancer of the breast with another synthetic oestrogen, triphenylchlorethylene. Out of 22 cases of late cancer so treated, 10 have shown a significant, though temporary, retardation, or even partial regression of the growth of the tumour, but the initial effect of the treatment passes off comparatively rapidly, and except in one case, which has shown prolonged arrest, the ultimate course of the disease has in no way been altered. In 14 cases of carcinoma of the breast treated with stilboestrol by the same teams, 5 showed similar alterations in the growth and behaviour of the tumour. Mr. Lockhart-Mummery comments that while "the results are not of any immediate practical importance, the fact that a marked response was shown in some cases is, clearly, of the very greatest interest and provides a real incentive to the prosecution of this work."

Radiobiology and Radiotherapy

Some quantitative observations from the Strangeways Laboratory, Cambridge, on the effect of *x* rays and gamma rays of radium on tumours of the cervix uteri and also of the tongue and oral cavity seem to support the opinion given at an earlier stage of the work that the significant biological factor for the successful radiotherapy of these tumours is the capacity of the tumour cells for differentiation. In a series of tumours of the cervix the conclusion was that an increase in dose was not correlated with improvement of results in the differentiating types of growth, but with some improvement in the more anaplastic types.

In cancer of the cervix uteri treated with combined radium and *x* rays, diarrhoea and other intestinal disturbances have been not uncommon, but these have not been observed in cases treated by radium alone, and it is suggested in a report from the Marie Curie Hospital that further investigation should be made before the combined technique as a routine method is held to be justifiable.

The research department at Westminster Hospital reports promising results in radiation treatment of osteoclastomata (dose: 2,000 roentgens).

"The New Alchemy"

A brief note in the report announces that an account is in the press concerning five years' treatment of cancer cases by the million-volt *x*-ray installation at St. Bartholomew's. The scientific committees of the Campaign consider that the time is opportune for an intensified effort in this field. Prof. F. L. Hopwood, at the annual meeting, pointed out also that with the cyclotron every member of the series of natural elements can be disintegrated and transmuted. Quantities of these substances have been given a radio-activity comparable to, or even exceeding, that of the radium family of elements. In addition, beams of neutrons are being produced whose penetration into, and lethal action upon, living matter differ notably from those of *x* rays. Radio-active varieties of such elements as iodine, calcium, phosphorus, iron, and sodium can be introduced, either distributed throughout the whole body or selectively deposited in certain organs, in the form of non-toxic chemical compounds, and there they may effectively irradiate the surrounding tissue. "Thus the alluring prospect is opened up of combining radiation therapy and chemotherapy in a new method of attack on cancer. . . . The new alchemy seems to offer glittering prizes. We must beware lest it also adds to the number of martyrs to science."

Primary Gastric Cancer

Finally, the Clinical Cancer Research Committee of the Campaign presents this year a detailed analysis of 1,405 cases of primary cancer of the stomach.

The proportion of males to females was 3 to 2, and the mean age of onset was 60 in both cases. It was found that 54.5% of the patients had consulted a doctor within the first three months, and that 52% were referred to hospital at once, 13% were kept under symptomatic treatment for periods up to three months, and a further 19% for over four months. The seriousness of the position is shown by the fact that of 241 gastrectomies, only 22% were done while the symptoms were of less than three months' duration, and only 40% of less than six months' duration. Laparotomy was performed in 49% of all the cases, but in only 17% was a radical operation possible, and a palliative operation in only 15%. The survival rate after radical operation in the early stages, before the regional lymph nodes were involved, gave, on the basis of a four-year period of observation, an expectation of life of 65 to 70% of the normal. When only a palliative operation was possible the expectation fell to 40% of the normal. Operation mortalities were as follows:

	Per cent.
Total gastrectomy (20 cases)	90·0
Billroth's operation (27 cases)	25·9
Polya's operation (181 cases)	25·4
Palliative gastrojejunostomy	29·0
Simple exploration	23·0

NEW YEAR HONOURS

(Concluded from p. 23)

We print below the conclusion of the New Year medical Honours List:

O.B.E. (Military Division)

EDMUND HENRY BOTTERELL, Lieut.-Col., R.C.A.M.C.
FRANK PERCIVAL LLOYD, V.D. Lieut.-Col. (Acting Col.), R.C.A.M.C.
JOSEPH ARTHUR MACFARLANE, E.D. Col., R.C.A.M.C.
LORNE CUTHBERT MONTGOMERY, *M.C.*, V.D. Col., R.C.A.M.C.
DONALD ROBERTSON WEBSTER, Acting Surg. Capt., R.C.N.V.R.

O.B.E. (Civil Division)

JOHN BEATTIE DUNLOP, M.B. Post Office Medical Officer, Bradford, Yorkshire.
VICTOR LAURENCE FISHER, M.R.C.S. Senior Surgeon, s.s. *Stratheden*, Peninsular and Oriental Steam Navigation Company.
DONALD MCFARLANE LIVINGSTONE, M.D. Senior Medical Officer, Surrey County Council. For services to Civil Defence.
HAROLD ETTRICK MOORE, M.B. Civilian Adviser in Rehabilitation to the Air Ministry.
MATTHEW BURROW RAY, D.S.O., T.D., M.D., M.R.C.P. Col., Medical Assessor to the Joint War Organization of the British Red Cross Society and Order of St. John.
CAMPBELL KAY STEVENSON, M.D. Medical Superintendent of the Emergency Hospital at Killearn, Stirlingshire.
CHARLES LINDSAY SUTHERLAND, M.D., D.P.H. Chief Medical Officer of the Silicosis Medical Board.
ALEXANDER BOYD WILLIAMSON, T.D., M.D., D.P.H. Medical Officer of Health, Portsmouth. For services to Civil Defence.

M.B.E. (Military Division)

CHARLES HOLLENBERG, Major, R.C.A.M.C.

ASSOCIATION OF VOLUNTARY TEACHING HOSPITALS

At a meeting of nominated representatives of London and Provincial teaching hospitals, held at Westminster Hospital Medical School on Dec. 7, it was agreed to form the Association of Voluntary Teaching Hospitals of Great Britain, the object being to have an organization available which, with its specialized knowledge and experience of teaching hospital problems, will be able to represent those hospitals at all times. It is thought that it will serve a very useful purpose in any planning or negotiations arising out of the Good-enough Committee's report. Among those attending this inaugural meeting were: Dr. H. E. A. Boldero (Middlesex Hospital), Dr. W. Russell Brain (London Hospital), Dr. E. ff. Creed (King's College Hospital), Mr. W. D. Doherty (Guy's Hospital), Mr. G. B. Edwards (University College Hospital), Dr. Hugh Gordon (St. George's Hospital), Dr. F. G. Hobson (Radcliffe Infirmary, Oxford), Prof. T. B. Johnston (Guy's Hospital), Mr. G. H. MacNab (Westminster Hospital), Dr. E. F. Scowen (St. Bartholomew's Hospital), Dr. S. Cochrane Shanks (University College Hospital), Mr. Fauset Welsh (Birmingham United Hospital), Mr. J. M. Wyatt (St. Thomas's Hospital).

Further developments in the plans to deal with nutrition problems in the Colonial Empire are to be financed under the Colonial Development and Welfare Act, 1940, and a free grant of £10,000 has just been sanctioned. A grant of £3,200 to cover preliminary work in connexion with the proposed Colonial Nutrition Organization was made last June. The new scheme is to enable grants to be made for *ad hoc* proposals for interim developments—e.g., engagement of temporary technical staff, training of staff, provision of technical equipment or materials required for experimental work.

Reports of Societies

CHANGES IN MUSCLE AFTER INJURY

At a meeting of the British Orthopaedic Association, held in London on Dec. 15 and 16 under the presidency of Mr. St. J. D. BUXTON, two papers were read on the changes in muscle after injury—the first an experimental study of the vascularization of muscles by Prof. W. E. Le Gros Clark of Oxford, and the second on the changes in human voluntary muscles due to denervation and re-innervation by Miss Ruth Bowden. There were also discussions of papers on recent clinical work on war injuries, including one at Queen Mary's Hospital, Roehampton, on amputations and limb fitting.

Vascularization of Muscles

Prof. LE GROS CLARK said it was well known that most muscles were supplied by two or more main blood vessels, and injected specimens showed quite clearly that their branches effected a number of anastomotic connexions inside the muscle. But such material gave no real indication of the adequacy of these connexions for the establishment of a collateral circulation, or whether the interruption of one of the main essels (or of one of their intramuscular branches) led to a localized ischaemia which might be severe enough to be of practical importance. These problems had been studied experimentally in rabbits by ligature of blood vessels supplying muscles, the results being assessed partly by histological examination and partly by using a highly diffusible dye—bromophenol blue. This dye rapidly coloured all normal muscles after intravenous injection, and was valuable in assessing the physiological efficiency of the circulation, as it provided an indication of the degree of interchange between the capillaries and muscular tissue, even where a feeble circulation in the main blood vessels might still be present.

The efficiency of the anastomotic connexions varied much in different muscles. In some, such as the tibialis anterior, ligature of one of the vessels of supply led to a sharply defined area of ischaemia. For example, two days after ligature of the lower vessel of supply to the tibialis anterior, intravenous injection of bromophenol blue stained the upper half of the muscle to a normal intensity, but the lower half remained almost entirely unstained, and the boundary between the two areas was sharply defined. The normal vascularization of the lower half of the muscle was not restored for about a week. If both of the main vessels supplying the tibialis anterior were ligatured revascularization was delayed for a fortnight. In experiments in which small steel bearings were shot through the adductor muscles of rabbits at velocities of 250 to 1,000 m. per sec., localized and sharply defined areas of ischaemia were produced as the result of interruption of the muscular vessels (probably associated with some local vascular spasm).

Histological study of the unstained areas showed that most of the muscular tissue had undergone necrosis. The necrotic tissue was removed rapidly by the invasion of granulation tissue with abundant macrophages, and its removal was quickly followed by the regeneration of new muscle fibres. In this way a large part of the damaged muscle appeared to become reconstituted. More experimental work was needed to determine whether this regeneration was more than a temporary phenomenon or whether it led to the formation of functional muscular tissue. The experiments did show, however, that in the muscles of the rabbit there was a remarkable potentiality for muscle regeneration in devascularized tissue, and that in spite of anastomotic connexions the interruption of one vessel of supply to a muscle (or one of its branches) might lead to a relatively extensive and well-defined area of ischaemia lasting for several days.

Changes due to Denervation

Miss RUTH BOWDEN in her paper showed the importance of maintaining the muscular function in units denervated as a result of peripheral nerve injury. In such cases, she said, atrophy was most rapid in the early stages of paralysis, with an increase of connective tissue, associated with Wallerian degeneration in nerve fibres and obliteration of the terminal Schwann tubes and motor end-plates. Eventually, as muscle fibres continued to atrophy, they were replaced by fat and connective tissue. Finally the muscle might resemble tendon. Time was an important factor, for a fairly good degree of functional recovery was possible up to one year after denervation. Nevertheless the atrophy and replacement of connective tissue started from three months onwards. The possibility of reversing the changes in muscle depended on such things as sepsis, age, mobility of the limb, and physiotherapy, as well, of course, as the nature of the lesion in the nerve itself.

The electrical changes in denervated muscle were due not so much to degeneration as to atrophy. The more sluggish response to galvanic stimuli was due to the muscular conduction of the impulse instead of through nerve. It might disappear altogether if atrophy was advanced. Miss Bowden stressed the value of galvanism in maintaining muscular activity and limiting the degree of atrophy; it must, however, be regular and be started as soon as possible after injury. Contractures which might occur in denervated muscle because of the connective-tissue formation could be retarded by physiotherapy, and might be prevented by daily movements throughout the whole range of the joints of the limb. Splinting of paralysed muscles should never maintain complete immobilization.

Early Treatment of War Wounds

In a discussion on early treatment of war wounds, especially those occurring during the invasion of the Continent, Lieut.-Col. E. A. MACNAUGHTON, R.C.A.M.C., described closure and treatment in plaster of ten compound fractures of the femur. He said that provided the immediate primary treatment (surgical excision, blood transfusions, penicillin, and sulphonamides, etc.) had been adequate the thigh wounds were completely closed without drainage at the next stage in treatment, which occurred a week or so afterwards. This was accompanied by accurate reduction of the fracture, and, where required, stainless steel wires or vitallium screws were used in its fixation without prejudice to wound healing. This fracture fixation was, where suitable, done through the existing soft-tissue wound. He emphasized the importance of adequate preparation of the patients for operation by rest (as the patients usually were tired from travelling), replacement of blood loss, further penicillin before and after operation, and avoidance of preliminary examination of wounds in the wards.

Lieut.-Col. R. ZOLLINGER (U.S.A.M.C.) questioned the value of sulphonamide drugs inserted into wounds. This, he felt, was unnecessary if the primary treatment of excision had been adequate. Furthermore, sulphonamides thus inserted into wounds did not penetrate into far crevices, where it was often important to maintain a high concentration of the drug. This could be carried out only by adequate general administration.

Amputations

At Queen Mary's Hospital, Roehampton, Mr. F. G. ST. CLAIR STRANGE read a paper on the amputation stump in health and disease. The amputation stump, he said, must be considered a new and normal organ, upon the perfection of which depended the subsequent health and happiness of the patient. It should be an evenly truncated cone, having the smoothness of skin and scar mobility which followed first-intention healing, and no scar and oedema in the subcutaneous tissues. The operative technique should be planned with precise attention to detail at every stage, so as to achieve a comfortable, efficient, and healthy stump. It must be a plastic as well as an orthopaedic operation. The flaps should be rounded, and should contain deep fascia to retain lymphatic, blood, and nerve supply to the skin. There must be minimum trauma of nerves. Bone and periosteum must be cut at the same level. Careful haemostasis must be followed by artistic skin suture. A neat stump, besides being physiologically sound, gave the surgeon a justifiable sense of aesthetic achievement and, more important, gave the patient a good psychological start. "Dog-ears" and other redundancy must be avoided, the flaps just meeting over the end of the stump.

After operation care must be taken to avoid the development of flexion contractures. There must be a minimum of disturbance of dressings; elastic stump bandaging should be started

from the 12th day to shrink the stump without forming a "waist." Non-resisted exercises should be encouraged from the 12th day; progressive resisted exercises did not begin until 3½ weeks after amputation. With a thorough regime stumps were ready for measuring in 4 to 6 weeks' time, and were ready for the artificial limb by the time it was made. On the subject of re-amputation Mr. Strange emphasized the need, in spite of the use of penicillin and sulphonamides, to follow surgical first principles; in other words, the operation should be approached in the same spirit as, for example, a bone graft for an old compound fracture. There must be an aseptic field, and adequate time must be left after the healing of the original sepsis before re-amputation was embarked upon.

Prof. PRIOROV (Russia) said that in his work plaster was applied to the stumps in order to facilitate transit in cases of primary guillotine amputations in field hospitals. First dressing was never done before the 8th day. Secondly, suture of long skin flaps was frequently done using the sutures through plastic buttons, which could be pulled up gradually until closure was effected. Operative technique was essentially the same as in Great Britain, except that the end of the bone canal was usually tamponed with muscles. Temporary bucket peg-leg prostheses were extensively used. Col. STARK (New Zealand A.M.C.) stated that all their amputations were left open till the 4th or 5th day, and sutured then. They were expected to heal by primary intention. Major MATHER CLEVELAND (U.S.A.M.C.) said American Army surgeons were instructed to carry out circular amputations at the lowest possible level. In most cases these were followed by skin traction within a plaster bucket. The patient was then immediately evacuated to the zone of the interior, where definitive treatment was carried out. Prof. T. P. MCMURRAY asked for caution to be exercised; surgeons should not hastily carry out amputations; even a bad limb of his own might be better to a man than one which was artificial.

During the meeting Major JOHN CHARNLEY, R.A.M.C., demonstrated an adjustable weight-bearing calliper splint designed on the principles of H. O. Thomas and yet available for mass-production in a variety of standard sizes. It had a ring for ischial bearing, which was adjustable within certain limits for differences of thigh circumference, and upright irons adjustable for length by a screw-fitting extension. With a suitable supply of basic parts an hour or two was required for fitting and supplying compared with several weeks for a made-to-measure appliance at present.

MEDICAL AND VETERINARY EDUCATION

A discussion on medical and veterinary education and the parallelism in the preparation for the two professions was held in the Section of Comparative Medicine of the Royal Society of Medicine on Dec. 20, Dr. H. J. PARISH, president of the Section, in the chair.

Sir HENRY DALE, P.R.S., in introducing the subject, said that the problems of preclinical education in the two professions were largely a matter of common interest; it was in clinical education that the needs of the two disciplines began to diverge, though there were still parallel stretches. The human brain on the one hand and the ruminant stomach on the other had their special physiologies, which could not be covered by any common course; but it must not be forgotten that much of the knowledge of the physiology of the human brain depended on such experiments as Sherrington carried out for many years on the dog, while much knowledge of the physiology of respiration, applicable equally to man and to the domestic animal, was demonstrated much better on the human subject than on any non-cooperating animal.

In both professions, with the rapid progress and expansion of knowledge, it became ever more difficult to compress the necessary instruction within the bounds of a course which would enable the practitioner to start his work before he had passed the term of his intellectual and physical vigour. Sir Henry had been glad to see in the Royal College of Physicians' report that emphasis was laid on the need for jettisoning a good deal which had got embedded in the medical curriculum. In the curriculum of both human and veterinary medicine there was a dichotomy that was likely to make itself increasingly felt. There would inevitably be a cleavage between those who were marked from the outset, by reason of ability, opportunity, or choice, for expert laboratory practice or, perhaps, preventive administration, and those who were trained to apply their knowledge in day-to-day clinical practice at the bedside or in the field. Some separation must be made in the training for these two spheres, otherwise both the man whose career was to be in laboratory research and the man who was to take up general practice would find themselves bogged down with an excess of knowledge that they could not possibly use.

This dichotomy would logically involve a closer association, and perhaps later an actual fusion in training, of those who approached an administrative career in human and in veterinary medicine. In Australia a distinguished pathologist of veterinary training and qualification held for years, with conspicuous success, the post of chief pathologist to one of the leading hospitals in the Dominion. If the history of the researches which had strongly affected the advances in the knowledge of human disease were examined, abundant examples would be found of the reciprocal influence of human and of veterinary physiology and pathology. He mentioned the work of John Hunter, Edward Jenner, Louis Pasteur, Robert Koch, also the much more recent work on dog distemper leading to a more general study of virus infections by his late colleagues Laidlaw and Dunkin. Once it was recognized that there was a special kind of career in experimental physiology and pathology and the study of the requirements of health and the departures leading to disease, he believed that on such a basis work on the human side and on the veterinary side would become so closely linked that they would fuse almost inevitably into a common discipline.

Pre- and Post-graduate Phases

Prof. G. W. PICKERING (Secretary, Planning Committee on Medical Education, Royal College of Physicians) said that attempts to reform the curriculum in the past had failed, partly because of natural conservatism, and partly because of absence of agreement as to the shape which reform ought to take. The dilemma in medical and perhaps in veterinary education was the choice between sacrificing on the one hand the educational and on the other the vocational needs of the students. It had been suggested that for the average student university education should cease, and that he should be given a much simpler and more practical training in his craft. He was doubtful, however, whether it was practicable in human society to follow the method of the bee and to select "workers" and "queens." They all knew men who were chosen as "queens" and proved to be second-rate "workers," and men who were made "workers" when well qualified to be "queens." The first step was to divide the curriculum into undergraduate and postgraduate phases. In the postgraduate period particular attention should be paid to vocational training—that is to say, to practical training in the craft of medicine and the requirements of specialisms. It should begin wth a year's resident house appointment, which should be compulsory for all intending to practise medicine. At present it was little wonder, with the multitude of subjects in the ordinary course, if the student became a mere memorizer. Something could be done by planning by the teachers among themselves. The second remedy was the elimination of detail. Above the portal of every medical school should be placed Karl Pearson's words: "The true aim of the teacher should be to impart an appreciation of method and not a knowledge of facts"; though, to be sure, method could not be imparted without imparting some facts. If the curriculum were divided into undergraduate and postgraduate—the first being essential for all, and the second for those with special requirements—a good deal of topographical anatomy, of special pathology and histology, and a number of special medical and surgical procedures could be eliminated from the undergraduate's course. Revision of teaching methods was also needed. The popular teacher to-day was the man who could spoon-feed, but the teacher who was really wanted was the man who made his students think for themselves.

Closer Liaison in the Educational Scheme

Prof. J. B. BUXTON (Principal of the Royal Veterinary College) urge that the minimum age of admission to veterinary

schools should be 18. The curriculum was in places grossly overcrowded, owing to the mass of factual knowledge which had to be transmitted to the student, rendering the examination a test of memory for detail. Any tendency to specialize in the pregraduate curriculum was to be deprecated. The relative importance of the subjects and their co-ordination should be determined by the needs of general practice. He referred to the desirability of as close a co-operation as possible between his college and the University of London, of which it was a unit. A number of useful contacts socially and in other ways had been made between the students of the College and the other students of the University, especially in the medical schools. The chief impediment was the small number of students who had been induced to read for a university degree. No other professions were so closely connected as the medical and veterinary, and no one would question the desirability of a closer liaison within the framework of the educational scheme. It would not be possible, even if desirable, to teach medical and veterinary students in the same classes, but the desired results could be secured through an administrative system which enabled either the medical or the veterinary student each to make free use of the course of instruction given to the other. By such means their curiosity would be awakened and their natural desire for further information stimulated.

The PRESIDENT (Dr. Parish) emphasized the point that teachers should be chosen with some regard to their ability to teach, and not merely for their research status. Lectures were not as profitable as they ought to be; and professors, like ordinary school teachers, might with advantage receive some training in passing on their knowledge to others. The time factor was the main trouble in organizing the medical or veterinary curriculum. It was a very big problem to provide "culture as well as clinics," but he felt that far too much time was being wasted on inferior teaching.

Reform of Teaching

Dr. DOUGLAS MCCLEAN (Lister Institute) said that excellent principles were laid down in the Goodenough report, but there was failure to apply them in specific recommendations. The committee called for ruthless pruning of the curriculum, but proposed two quite formidable additions to it—psychology and statistics. Medical students were of the most diverse character, aptitude, and ambition. They were given a medley of material, partly in the hope that it would furnish a scientific background and partly in the hope that it would meet some of their instructional needs. The mass of facts served to confuse them and left them without leisure to think. There remained this lamentable hard-and-fast division between the preclinical and clinical phases of education, so that the second M.B. came to be regarded as a *pons asinorum* which had to be passed by accumulating facts which they did not recognize as having any relation to practice in later life. If teachers in the faculty of medicine got together much good could be done by agreement. Preclinical subjects should be presented from the common aspect of the science of human biology. Drastic reductions in the detail of anatomical teaching might be made, but the time saved should not be devoted to adding a whole lot of embryology. Much more time should be given to physiology, biochemistry, and pharmacology. Pathology should be taught much more as a macroscopic science, not a microscopical one. Formal lectures should be cut to the minimum. In all schools there were students who had not a natural aptitude for appreciating generalizations as to scientific methods and yet had qualities likely to make them excellent practitioners. On the other hand, there were those who from the first showed a keen interest in the scientific approach. Should they have two courses—one designed for the scientific study of medicine and the other for producing useful general practitioners? Such dichotomy would lead to a sort of discrimination, one course being regarded as an honours and the other as a pass course. The aim should be a greater elasticity of the present curriculum, and examinations should be planned to allow the students to have a wider choice of subjects.

Dr. FRED BULLOCK (registrar, Royal College of Veterinary Surgeons) said that in veterinary education the teachers and the examiners were brought together and the curriculum was their combined work. Prof. EDHOLM (professor of physiology, Royal Veterinary College) said that with a good teacher a bad curriculum did not matter very much. It was important to make the teaching side of academic work more attractive, and attention should be paid to teaching ability in making appointments. Dr. JOHN RICKMAN suggested that there should be a "job analysis" of a general practitioner's life. He thought that one result of such an analysis which might surprise them would be the amount of time and attention demanded by what might be called social medicine. The results of such an analysis would be useful in directing the education of students. Dr. J. T. EDWARDS remarked that it was a great predecessor of Sir Henry Dale—namely, Sir Joseph Banks, President of the Royal Society in 1778—who directed the movement which founded veterinary education in this country. Dr. E. G. WHITE suggested that teachers should prune one another's subjects. In veterinary medicine there should be a basic qualification with as wide a training as possible, but no more specialization than was absolutely necessary, and when this had been gained, as many people as possible should be encouraged to continue their training for a degree after qualification. Dr. W. R. WOOLDRIDGE said that in medical education they had relinquished what veterinary education still had—namely, the one-portal system. In the veterinary profession there was only one standard of examination, though in fact the examination was held under such difficult circumstances in view of shortage of time and of examiners that it was almost impossible to have a set of examiners to maintain the same standard at every centre. In medicine there had been a very large number of stimulating teachers in the university schools, and as a result a very progressive type of graduate had emerged.

There was a large audience of members and guests at a meeting on Dec. 8 of the Whipps Cross Hospital Medical Society, when Dr. Keith Simpson gave a lecture which he called "Common Sense in the Detection of Crime." Possibly he did not succeed in proving the thesis that his work consists largely of the application of plain common sense, but his address (with lantern slides from his own collection) was enthusiastically received. That the mutilated remains of a woman discovered beneath the hearthstone of a bombed house in Dalston were not those of an air-raid victim (as was at first suggested) was something which could, no doubt, have been established by plain common sense. But the demonstration, despite time and mutilation, of her approximate age and height and then, by means of other characteristics, of her identity and finally that of her murderer and even the manner of her death was a process calling at least for uncommon ability.

The Se tember–October issue of *Industrial Welfare and Personnel Management*, the journal of the Industrial Welfare Society, includes an article on personnel selection in the Canadian Army by Major G. H. Turner, of Canadian Military Headquarters. In 1941 an advisory personnel service was organized (*a*) to describe its requirements not simply in terms of the numbers needed for each of the various duties in each of the Army's units, but in terms of the physical and emotional characteristics, personal attributes, standard of education, and mental level required for each type of work; and (*b*) to describe the non-medical characteristics of soldiers, to assess potentialities for training or employment, making use of both medical and non-medical data, and to make the best possible recommendations for placement. Every man joining the Canadian Army is examined by a medical board and by a specially trained personnel officer. Mental testing is confined to a general classification test, and chief emphasis is placed on a systematic interview. Recommendations for placement are followed up by reports of selection officers at each stage of the soldier's training and at base in theatres of operations, and as time goes on recommendation for training and employment becomes more and more specific. The PULHEMS system of grading was adopted in 1943. It takes its name from the initials of the seven characteristics of a man which are of concern to the Army, and which, taken together as a profile, indicate the kind of work he is fit to do. The points considered are: *P*hysique, *U*pper part of body, *L*ower part of body, *H*earing, *E*yesight, *M*ental ability, *S*tability or emotional make-up. This device provides a handy key to the soldier's physical, mental, and emotional limitations which, when integrated with job specifications, makes possible more appropriate placements and the employment in forward areas of men with minor disabilities not affecting their performance of the particular duties to which they are assigned. The principles involved in this approach are equally applicable to civil employment.

Nova et Vetera

VAN HELMONT: THE 300th ANNIVERSARY OF HIS DEATH

When Jean Baptiste Van Helmont (1579–1644) died, 300 years ago, science and medicine lost a great inaugurator who in spite of credulity and superstition shed much light on medical problems by his discoveries in physiology and his insight into pathology and therapy. These derived just as much from his empirical observations as from opposition to the "humoralism" of the Ancients so stubbornly preserved by his contemporaries.

Van Helmont demonstrated the significance of acid in gastric digestion, which up to his time was attributed to heat and trituration. Acid of a certain nature and at its appropriate place thus performs, in Van Helmont's opinion, an important vital function. It becomes a pathological factor when acting elsewhere, such as in pus formation, notably in empyema. This is interesting in view of modern theories which hold acid reaction of the tissue responsible for leucocytic emigration. Van Helmont denied the existence of such things as the "innate heat and radical humour" which, according to theories current at the time, were cooled by the action of respiration and pulse. In Van Helmont's concept respiration enables an element of the blood to combine with a "ferment" from the air and thus to dispose of a certain "residue" in the venous blood. This material is converted into "volatile salts" and escapes as such through the lungs. The conception is not far removed from our own and was a great advance on the current view.

Van Helmont examined the specific gravity of the urine. He appreciated the high digestive qualities of bile, then regarded as a noxious waste product. He was the first to describe the rhythmic movement of the pylorus and the association of kidney disease with ascites and oedema. He visualized the body as an aggregate of metabolic centres, his "archei." If they perform their function properly, nutritive material will be used up completely. If not, residues are deposited which account for the anatomical changes in diseases. These vary according to the pathogenic agent entering the body from outside—for example, harmful chemical substances inhaled in the mines. The full recognition of these places Van Helmont among the classical describers of occupational diseases, notably silicosis. Van Helmont's therapy was opposed to ancient "constitutional" therapy, which aimed at restoration of the humoral balance. It was directed towards the removal of the harmful exogenous agent; it was "aetiological" therapy. This new concept of diseases as entities determined by the nature of the pathogenic agents and the specific anatomical changes developed *diagnosis* based on the *science* of pathology as against *prognosis* as the main art of the physician. Localization of diseases in the organs enabled Van Helmont to unmask the "folly of catarrh"—a then time-honoured way to explain most diseases as the product of a flow of mucus from the brain straight through the skull into nose, mouth, lungs, joints, and muscles.

Hardly any of Van Helmont's works were published during his lifetime. Only twelve years after the publication of his collected works (1648; English translation 1662) Schneider published his book *On Catarrh*, in which he proves again the local origin of mucus. In addition he gave the first description of the mucous membranes. It remains Van Helmont's achievement to have unmasked the "folly of catarrh" and to have established the local origin, in organs and tissues, of most diseases. This was more than 100 years before G. B. Morgagni wrote his book on the *Seats and Causes of Diseases*, which gives the anatomical basis of symptoms rather than of diseases. Van Helmont was therefore in some way in advance of the famous "Father of Pathology." Van Helmont discovered "gas"; this in addition to its chemical notion meaning to him the essence of any concrete body responsible for its specific shape, function, and destination. It represents the force immanent and acting *in* matter as against the usual concept of a "soul" acting from outside *on* passive and inert matter; Van Helmont's concept was taken up by Glisson and Leibniz. Not only this, but the early translations of his work and a multitude of quotations down to the nineteenth century bear witness to Van Helmont's deep influence on contemporaries and posterity.

REFERENCES

For the chemical part of Van Helmont's work and biography and bibliography: Partington, J. R., *Ann. Sci.*, 1936, **1**, 359. Short biographical sketch: Moon, R. O., *Proc. roy. Soc. Med.*, 1931, **25**, 23.

For the medical and philosophical part: Pagel, W., "The Religious and Philosophical Aspects of Van Helmont's Science and Medicine," *Suppl. Bull. Hist. Med.* No. 2, Baltimore, 1944; and idem, "J. B. Van Helmont," *Nature*, 1944, **153**, 675.

Correspondence

Nursing and Tuberculosis

SIR,—Can we not come into the open on the question of greater risk to nurses as regards liability to contract tuberculosis? Recent letters in this *Journal* have indicated support for the warnings of the Prophit Survey, tentative and cautious as they were.

I can offer no large figures and percentages, but for years have collected case histories of nurse-patients, and am appalled at the tale they tell and the reiteration of events described. Two facts emerge sharply. So great is the need for nurse labour that diagnostic acuteness is blunted on the part of those who work with them: as regards the girls themselves, there is always the next "exam" looming ahead. So both the employers and employed must struggle on to keep the machine going and to maintain necessary status within it. Further, symptoms when offered are evasive and explainable. When the crash comes the nurse is sent off for treatment, the hospital's rush persists, and it seems to be nobody's business to follow up possible implications.

Replies to inquiries made from two medical superintendents, who receive nurse-patients as part of their normal intake, were revealing. Both were quite clear that the incidence was unduly high. One had expressed his view in a Press letter, which was quoted in the Prophit report as saying that "tiredness does not lead to the *x*-ray room." The other wrote me that "of course" nurses may be expected to go down more frequently than others: they are comparable with front-line soldiers, where heavier casualties must always be expected.

My plea therefore is for a different approach to the whole question of nursing conditions. Admit the thought of front-line service with the corollary of pensions for the disabled and a far higher degree of care for positive health during training. Wards are still being closed for lack of staff because parents have the "horse sense" to realize that, despite better pay, conditions are too arduous.

Until nursing is honestly recognized for what it is—a profession of adventure, of some risk, and of high rewards in service—a lack of recruits may be expected, and is equally deserved.—I am, etc.,

Northwood. ESTHER CARLING.

Mass Radiography

SIR,—Mass radiography is now being used to an ever-increasing extent among the civil population. By this means many cases of pulmonary tuberculosis are being discovered at an earlier stage than would otherwise be possible by waiting for the patient to come to the doctor. For once the doctor is going to the patient first.

Dr. Henderson (Dec. 23, p. 832) says that all that is required to make people come forward for examination is "efficient and attractive propaganda, complete with talking films . . . lecturers to explain to the public what it is all about, and these to go in advance of the unit." If so the propaganda must be much more intense than it is at present. Well-educated people of middle age have spoken to me about mass radiography. They approve of the scheme and understand that other conditions can be detected by this method. Their attitude is, however, that the scheme is all right for young people, but they themselves prefer to remain in ignorance if anything is wrong with them. "Time to worry once they do not feel perfectly well" is the attitude they adopt. Even personal talks often fail to change this point of view.

In connexion with tuberculosis, however, the old well-tried methods of detecting new cases seem to be neglected these days. As a physician in a sanatorium receiving patients from all over the United Kingdom I am frequently being asked by the family of the patient if they are quite safe and have not been infected. Many tuberculosis officers, general practitioners, and consulting physicians fail to tell the patient, once the diagnosis of pulmonary tuberculosis has been made, that his immediate contacts in the same house should be clinically examined and a radiograph taken. In this sanatorium I can call to mind

twelve instances in the last year or so where near relatives of in-patients have later developed the disease themselves. Several of these relatives have sought admission, and some have been found to have extensive disease. Had they been examined as contacts when the first case was diagnosed it is almost certain that evidence of the disease in them would have been found also.

Whichever view of adult tuberculosis is taken, either of exogenous or endogenous reinfection, both schools admit that frequent exogenous reinfection can overcome a person's immunity to the disease. Hence as many contacts as possible should be examined both clinically and radiologically. Tuberculosis officers these days are often hard pressed, but the fight against tuberculosis must be an unrelenting one. Even if contact examination be limited to those cases with a positive sputum a good number of cases will be discovered. Thompson, B. C. (*Tubercle*, 1944, **25**, 33), found 4.6% of new cases among 1,817 home contacts. Re-examination should be carried out at least every three months while contact persists, and for two years after this has terminated. Mass radiography must not lead to the neglect of the methods of finding cases which have served us so well in the past.—I am, etc.,

R. GRENVILLE-MATHERS.

Pendyffryn Hall Sanatorium, Penmaenmawr.

Tuberculosis in Kent

SIR,—I am glad that Sir Waldron Smithers (Dec. 23, p. 834) did not write at length on this subject as he threatened, since he has managed to compress into fifty or so lines what must be almost a record in inaccuracies and illogicalities. Why does he pick on the question of provision for the tuberculous if he wishes to carry further the controversy as to the relative merits of voluntary and local authority hospitals? The greater part of the work in this field has long been done by the local authorities. Especially is this true of in-patient facilities. Voluntary effort for the tuberculous is concentrated on provision for out-patients.

One reason for the present shortage of sanatorium beds is that local authorities lack the money to cope adequately with the problem. To provide beds for all the tuberculous patients in Kent who need them would mean raising the rate, if the money were found by present methods. I cannot remember that Sir Waldron at any time advocated higher rates.

The experience of the war has shown once again that national problems must be tackled on a national basis. The E.M.S. scheme may have its defects, but I do not think that even Sir Waldron would suggest that we should have left the care of Service sick to charity. The introduction of allowances for the tuberculous recognizes for the first time the Government's responsibility in the treatment of this disease, which is above all else a social problem. It is only when this recognition is fully implemented and the Treasury accepts financial responsibility for the care of the tuberculous that an adequate and comprehensive service will be developed. The solution must be provided by national finance and planning working harmoniously with the locally elected representatives of the people.

The obstructive bureaucrat, whether he be a legacy from "bumbledom" or merely the conceited dispenser of charity, is as difficult to eradicate as the scabies mite. He is essentially an individualist whose sense of his own importance is stronger than his loyalty to the public. But, like the scabies mite, he will yield to appropriate scientific treatment; in this case a liberal application of live democracy. Meantime we must be on our guard to preserve democratic liberties.—I am, etc.,

BRIAN H. KIRMAN.

St. Mary Cray, Kent.

Immediate Repair of the Cervix

SIR,—The correspondence in your columns concerning episiotomy will have served a very useful purpose if only to recall or re-emphasize the importance of an intact perineum after childbirth. Elsewhere (*Clin. J.*, 1944) I have described the perineum as "the flap to the letter-box of life." This may be a little fanciful, but it is certain that a physiologically perfect perineum is essential to a woman's comfort, and, more important, to her happiness.

There is another equally important structure, however, which is much more frequently damaged in labour, and which is also frequently neglected. I refer, of course, to the cervix. It is safe to say that a large proportion of any gynaecological out-patients is composed of the results of a torn cervix—the discharges, the backaches, the trigonitis, the cervical type of dyspareunia, and what not. All of these could be prevented if the cervix was sutured after the third stage of labour. It is easy of access, the damage is obvious, and all the surgical equipment necessary is a masked nasopharynx, a large round-bodied needle, and some fine catgut; even a speculum is often unnecessary. An instant benefit, too, is often apparent, for many of the minor degrees of post-partum haemorrhage are due to bleeding from a torn cervix, and this can be controlled at once by a few simple sutures.

Pointing this out to a general practitioner, he objected: "It's all very well for you consultants to do this in your hospitals and 'posh' nursing homes. In a country cottage it is impossible." Practically, there may be some truth in this. Ideally, there can be no neglect of an important surgical procedure because of expediency. If, however, only those cervices damaged in hospitals and "posh" nursing homes were at once repaired, I assert most confidently that there would be not only an immediate improvement in puerperal morbidity, a greater percentage of healthy parous women, but (who knows?) a lesser incidence of carcinoma of the cervix.—I am, etc.,

MORTIMER REDDINGTON.

High-fat Diet in Diabetes

SIR,—I was much interested in the article on the dietary control of alloxan diabetes by Prof. J. H. Burn and Messrs. Kelsey and Lewis (Dec. 9, p. 752). They rightly point out that the reduction of sugar excretion in alloxan diabetic rats by change over to a high-fat diet could be applied to man with difficulty, since most people are of the opinion that such a procedure would produce ketosis and increase the liability to coma.

I think reference should have been made to the work of Best, C. H., and Hershey, J. M. (*J. Physiol.*, 1932, **75**, 49) with depancreatized dogs. The latter always exhibited a decreased sugar excretion in a phase of generalized weakness and liver failure preceding death. Fat-feeding of their animals precipitated this stage of decreased sugar excretion with, in some cases, a low fasting blood-sugar level, which necessitated a reduction of the previously-stabilized dosage of insulin; some depancreatized dogs could, by fat-feeding, tolerate a fairly high calorific diet and no insulin without showing glycosuria or hyperglycaemia for fairly long periods. These latter animals, however, were liable to sudden death and the livers contained large amounts of saturated fatty acids.

In view of this it is possible that a diabetic may appear to be well under control from the point of view of blood-sugar and urine-sugar estimations, but, as in Best and Hershey's dogs, have a fatty degeneration of the liver—an undesirable condition. It may be relevant to mention that I have found that diabetic patients dying in coma almost invariably reveal fatty degeneration of the liver.

It would be interesting if Prof. Burn and his co-workers investigated the fat content of the livers of his rats. If fatty degeneration is found, then I think that a high-fat diet in diabetics should be given with more consideration than merely its effect on blood and urinary sugar.—I am, etc.,

RONALD L. BISHTON.

University of Birmingham.

Hypopyon Ulcer

SIR,—It would be highly unfortunate if Dr. F. O. Taylor's report (Dec. 30, p. 868) of the successful treatment of hypopyon ulcer by sulphathiazole were to give the impression that such a happy result may be expected in all cases. Sulphonamide therapy is a routine part of the treatment of such conditions, but it is only a part, whose effectiveness naturally depends on the sensitivity of the causative organism. To omit, because of sulphonamides, the rest of the medical and, on occasion, surgical treatment would often result in avoidable disaster.

Two points in Dr. Taylor's letter appear to me of especial interest. How was it that no corneal scar remained, and that the eye was "perfectly normal," apart from slight dilatation of the pupil? And, secondly, why was the dilatation "very slight"? Had no mydriatic been employed, or were the posterior synechiae so extensive as to limit its effect?—I am, etc.,

Stratton. R. A. D. CRAWFORD.

Sign for Acute Retrocaecal Appendicitis

SIR,—The meaning of the sign in appendicitis is never complete without reference to the topographical anatomy of the little organ. The situation of an acutely inflamed appendix can nearly always be determined by the pressure method, for it is the inflamed parietal peritoneum in contact with the appendix that serves as a key to its position—a fact that can be proved by doing appendicectomy under local anaesthesia.

As a common experience the tenderness is found over the lower end of the caecum because the mid-inguinal position of the organ is the commonest. Now and again patients are seen with pain in the lower abdomen and tenderness just a little to the right side of the median plane; the appendix is likely to be hanging over the pelvic cavity. Again, in a high retrocaecal type (10 o'clock) the tenderness may be above the anterior superior iliac spine, and this may be even as high as half-way up to the costal margin in the prerenal variety. The accuracy of diagnosis is therefore credited to the teacher of anatomy.—I am, etc.,

Guildford. S. MUNTARBHORN.

Absence of Surgical Shock in Epileptics

SIR,—The case reported by Mr. Grantham-Hill (Dec. 30, p. 867) is an interesting one, but I am sure there are many who would agree that his inferences are unsound. In the first place a crushed limb is often almost painless because of the damage to the nerves interrupting their conduction. It is difficult, therefore, to understand what shock-producing afferent impulses can be present, particularly since experimental stimulation of the proximal end of a divided nerve has been carried out for long periods without producing shock. Secondly, an important element in the case was the damage to the blood supply. The main vessels were divided by the injury, and so the crushed limb was virtually isolated. In consequence there was an absence of the peripheral circulatory factors, such as loss of blood and plasma into the damaged tissues, and, perhaps, absorption of metabolites or products of tissue damage with a toxic action, which have much more evidence to support them as causes of shock than have the nerve impulses. For example, decerebrate animals can be brought to death in profound shock by the infliction of severe injuries to the limbs provided the blood supply to the injured part is not cut off. It is by no means certain, therefore, that the nervous factor is all-important in shock, and the evidence of Mr. Grantham-Hill's case cannot be taken as support for this theory.—I am, etc.,

Oxford. H. HAXTON.

Acute Brachial Radiculitis Improving after Malaria

SIR,—The following case suggests a new method of treatment and may possibly lead to further light being shed on the aetiology of the disease. For permission to report it I am indebted to Dr. R. L. Langley, and to Dr. R. C. Walker, medical superintendent of the hospital.

A well-built previously healthy marine, aged 23, was admitted, seriously ill, on Feb. 21, 1944. He was found to have bronchopneumonia, and responded to treatment with sulphathiazole, recovery being uneventful. On March 12, nineteen days after the onset of illness, he complained of "agonizing" pain across the back of the left shoulder, preventing sleep; there was no constitutional disturbance. The pain lasted a week, then gave way to a dull ache, with "pins and needles" down the outer side of the left arm; and at the same time he found that he was totally unable to lift his arm. On examination, March 19: Complete paralysis with severe wasting of the left deltoid; reaction of degeneration present. The serratus magnus and spinati (supraspinatus far more than infraspinatus) were affected in lesser degree. There was an area of skin anaesthesia over the area supplied by the circumflex nerve. Other muscles appeared to be unaffected. C.N.S. otherwise normal. Wassermann negative. Diagnosis: "Toxic radiculitis affecting C 5 and 6, a sequela to the pneumonia."

The arm was fixed in an abduction splint and physiotherapy commenced. This resulted after a few weeks in some recovery of the posterior fibres of the deltoid only; only slight recovery of movement (abduction to 45° just possible). Treatment was continued without further improvement until, on Sept. 4, he retired to bed at home with a relapse of malaria, first contracted in Sicily in September, 1943. He ran a temperature up to 105° F. on alternate days for ten days before the condition was recognized and controlled with quinine. On getting up he was astonished to find that he could use his left arm to reach up to shelves, comb his hair, etc., without difficulty. On examination, Sept. 25, there was complete voluntary range of movement of the arm, though with persistent weakness of the deltoid and serratus magnus. Wasting of the deltoid still marked; area of anaesthesia unchanged.

The improvement following fortuitous pyretotherapy was dramatic and unquestionable. This finding suggests that pyretotherapy might be worthy of trial in this disease, which in the present state of knowledge may leave severe disablement. If it were found to be effective in further cases, the implication would be that the disease is due to an agent susceptible to raised temperature.

By way of postscript I might add that 18 months ago I saw two infants in a children's ward, in adjacent beds but one, both with empyema. Within a week of each other they developed a sudden flaccid paralysis of the muscles about the shoulder girdle, with wasting, one being on the same side as and the other on the opposite side to the empyema. There was no constitutional disturbance. No other children were affected. The condition was baffling at the time, in the absence of any cases of anterior poliomyelitis in the district. If, as seems likely, they were cases of acute brachial radiculitis they are of interest in raising the question of infectiousness.—I am, etc.,

Menston, near Leeds. J. R. EDGE, M.B.,
Resident Medical Officer,
Highroyds Emergency Hospital.

Food Yeast and Artificial Milk

SIR,—The recent statement by Lord Templewood in the House of Lords has one extremely important sentence. He states: "Before we can hope for a revival in Europe the people must be fed." Everybody will agree with this statement, but why does he not include all citizens of the British Empire?

In India the children have been dying in millions for want of food. This want, by lowering their vitality, has made them the prey of serious epidemics. If we hope to see the men and women of India a healthy and happy people it is essential for the children to be given milk. All children need milk, and the giving of milk to school-children (which I first set going in Swansea) has provided ample evidence of its value. If we need a revival in India we must make arrangements to give milk, either fresh or as a good artificial milk. If we want a revolution, then let the children grow up starved and disease-tainted haters of England.

The *Journal* has in the issues for Nov. 18 (p. 668) and Dec. 16 (p. 796) pointed out in two valuable articles a source for the making of an artificial milk. I refer to the growing of "food yeast" in the West Indies. This food yeast contains a protein equal to that of milk, and it can be made up by British chemists into a good artificial milk whereby the Indian children and British can be supplied with good food while the economic condition of the West Indies can be put on a sound footing.—I am, etc.,

Swansea. G. ARBOUR STEPHENS.

Aetiology of Erythema Nodosum

SIR,—In regard to the subject of Prof. Bruce Perry's Bradshaw lecture, published in your issue of Dec. 30, it may be of interest to refer to the fact that erythema nodosum has been recorded in the virus disease lymphopathia venerea, generally in association with "rheumatic" manifestations. References will be found in *A Sixth Venereal Disease* (1933, Baillière, Tindall and Cox, London).—I am, etc.,

London, W.1. HUGH S. STANNUS.

Smallpox Vaccination by the Multiple-pressure Method

SIR,—In my recent paper (*Journal*, Dec. 16, 1944, p. 781) I overlooked an article on "Some Observations on the Immunity and Disability caused by Vaccinia," by S. F. Dudley and P. M. May (*J. Hyg.*, Camb., 1932, **32**, 25), in which the multiple-pressure technique was first reported on in this country. My apologies are due to the writers for this oversight. It is of interest, however, that, although Sir Sheldon Dudley's work was somewhat different in scope from mine, our general conclusions are in agreement.—I am, etc.,

Beckenham, Kent. H. J. PARISH.

Scabies

SIR,—I read Dr. Geffen's article (Dec. 23, p. 825) with much interest, but I must disagree with the statement he makes that "experience shows that home treatment fails in most cases." He has found this the case when he has prescribed benzyl benzoate with full instructions for use in the home.

For the past twelve months I have been giving cases of scabies one treatment of benzyl benzoate. Children have been treated in our cleansing station, but I have given adults pots of benzyl benzoate with written instructions upon how to treat themselves at home. I have been astonished at the very high proportion of cures obtained in this way—something in the nature of 100%. I think the secret of this success lies in the fact that I insist upon the patients' being covered with the preparation a second time immediately after the first application is dry.

I propose during the coming year to adopt the same home treatment for school-children, and I hope that I may obtain the same degree of success.—I am, etc.,

W. F. CORFIELD,
Colchester. Medical Officer of Health.

Medical Demobilization

SIR,—May I be permitted to echo the hope expressed by Dr. J. J. Conybeare (Dec. 2, p. 733) regarding the recommendation of the Central Medical War Committee to the Ministry of Health for the continued recruitment of doctors up to the age of 35. I think Dr. Conybeare "hits the nail on the head" in pointing out the essential differences between the E.M.S. and Service medicine, particularly the exceptional opportunities afforded to holders of appointments under the E.M.S. for obtaining valuable clinical experience in all branches of medicine and surgery and of taking higher qualifications. It is perhaps hardly surprising that so many newly qualified doctors who entered the Services some 4 to 5 years ago are viewing their professional future with some anxiety.

Without wishing to enter the controversy on the merits or otherwise of Service medicine as affecting the individual doctor, I think that after more than five years of war few would disagree with the view that the interchange of doctors between the Services and the E.M.S. would be a good thing for both, and it would seem that length of service in the armed Forces or E.M.S. would be a reasonable basis upon which such interchange might be considered. For those engaged in general practice a similar system of interchange between Service doctors might also be considered on the same basis.

As an aspirant for the Fellowship with five years' Army service I trust I may be forgiven for any prejudices which may be apparent in my letter.—I am, etc.,

"CAPTAIN, R.A.M.C."

Artificial Insemination

SIR,—Whatever may be the ultimate judgment on the moral and ethical issues of artificial insemination, one aspect of the matter would seem to me to have particular relevance to the question, and that is the emotional or psychological effect on the offspring. At what age is he or she to be told? Will he be thrilled to find that he is the product of a planned breeding experiment, or will he feel ashamed? Or will all knowledge of it be kept from him as something about which the less he knows the better?—I am, etc.,

Leicester. T. C. CLARE.

The Death of Burns

SIR,—I observe in the "Nova et Vetera" of the *Journal* of Dec. 30 an interesting note by Dr. S. Watson Smith entitled "The Disease that Killed Robert Burns," in which he states: "The popular belief that he died of drink and rheumatic fever cannot be supported, having no foundation in fact; it is pure fiction." There cannot be many medical men to-day who would support the old and popular opinion that this ill-fated genius died from alcoholism, but I should have thought the whole matter had been fully ventilated some twenty years ago by the late Sir James Crichton-Browne in his book *Burns from a New Point of View*. After an exhaustive survey of the available evidence he states: "It will not, I think, be disputed that Burns died of rheumatic endocarditis, with the origin of which alcohol had nothing to do."—I am, etc.,

Wolverhampton. ARCHD. OGG.

Medico-Legal

A FATAL OVERDOSE OF CARBACHOL

Carbachol, sometimes called "moryl," is a vasodilator and cardiac depressant. In our issue of July 4, 1944 (p. 28), we reported an inquest on Fl. Sergt. J. Simpson, R.A.F., who had died from a massive overdose of moryl given in hospital. The chief reason appeared to be that the manufacturers had without sufficient warning filled the usual ampoules with a quantity of crystals representing 400 times the usual liquid content of an ampoule. The jury found that the overdose had been accidentally given, but added a rider censuring the method of handling the drug at the hospital and the manner of labelling it by the manufacturers. Later the widow sued the Oxford Corporation; Dr. A. Lovas, who had prescribed the drug; Sister Butler, who had administered it; and Messrs. Savory and Moore Ltd., who had supplied it. Mr. Justice Hilbery, in the course of the proceedings, dismissed the corporation, the doctor, and the sister from the case, being satisfied that no evidence of negligence had been given against them. He found that the manufacturers had been packing the drug in crystal form in ampoules and selling it with printed instructions that 1/2 to 1 ampoule was the correct dose, but without a warning that moryl in dry form in an ampoule was not for injection. He held them to have been negligent, and awarded damages against them in the sums of £1,650 under the Fatal Accidents Act and £350 under the Law Reform Act, with costs. He also directed that they should pay the costs of the other defendants. As the doctor and nurse were found not at fault, the court had no opportunity to decide whether the corporation was responsible at law for the results of their actions. Before the decision in Gold *v.* Essex C.C. (1942, 2 K.B. 293), by which a county council was ordered to shoulder the consequences of the negligence of a hospital radiographer, a local authority would probably not, on the facts in the Oxford case, have been held responsible. Since that decision it would almost certainly be held liable if a nurse in its employment gave an injection negligently, and it might even have to pay damages for the negligence of one of its medical staff.

Dr. Lovas's defence was conducted by the London and Counties Medical Protection Society, to whom we are indebted for a report of the action.

A HOSPITAL LOSES A LEGACY

The rules concerning charitable trusts have been a stumbling-block to many charities. Testators without number, having fully intended that some charity shall benefit under their will, have made the gift invalid through some fault of language or disposition. The court will recognize and protect a trust in favour of a person, but not a trust in favour of an institution unless the object of the trust is wholly charitable. The interpretation of the adjective "charitable" is fairly strict: it includes the relief of poverty or sickness, and the furtherance of education or religion, but very little else. Not long ago St. Bartholomew's Hospital lost a large gift through the operation of these rules. Lady Dalziel of Wooler, a great friend and benefactor of Bart's, instituted shortly before her death a "discretionary fund" bearing her name. The capital was some £2,500, and a first charge was the upkeep of the Dalziel of Wooler family mausoleum. The remainder of the income was applicable in the discretion of the governors for the purposes of the hospital. By her will Lady Dalziel increased the discretionary fund by £20,000, subject to the condition that the governors should use the income so far as necessary for the upkeep of the mausoleum and the garden round it and should rebuild it if necessary. If they should fail to

carry out this request, the £20,000 was to go to other charities subject to the same condition. The executors, fearing that after duties had been paid they would not have enough left of the estate to pay all the legacies, asked the court to say whether the gift to the hospital was valid.

Mr. Justice Cohen had no doubt that it was not. To begin with (though this was not his reason for rejecting the gift—the original Dalziel of Wooler discretionary fund, with its permanent charge for the upkeep of the mausoleum, looked very much as though it contravened the rule against perpetuities. The law does not like property to be tied up so that it cannot change owners, and so it only allows a moderate restriction on alienation. A testator may tie up money in trust for the benefit of persons living at the time of his death and after their deaths for 21 years, but no longer. Prima facie, there was no means of putting an end to the charge. Counsel for the hospital argued that the charge was purely an internal matter within the hospital, and appeared only in the correspondence between the governors and Lady Dalziel. The judge doubted whether this argument was well founded, but even assuming that it was, the gift would only be good—he pointed out—if the purpose of the discretionary fund of the hospital was wholly charitable. In a general sense he admitted that the purposes of a hospital are necessarily charitable, but the purposes of this fund included the upkeep of the mausoleum. Now the maintenance of a tomb has never been considered a charitable purpose. There have been a good many cases before the court in which a gift with such a condition attached to it has been held valid; but in all of these the condition has imposed only a moral obligation, or the amount involved has been trifling. Here, however, the obligation was meant to be a legal one, for there was a "gift over" to other charities if it was broken. If it had been possible to ascertain how much of the gift would be required for the upkeep of the tomb, the court might have held that the gift of the remaining sum was valid. Here, however, the cost of maintaining the tomb was wholly uncertain. The result was that the hospital lost the £20,000. The judgment gives a very full survey of the tomb cases, and should be studied with close attention by hospital secretaries. They may then be alert to see that the good intentions of their testators are not frustrated by conditions of the kind that wrecked the Dalziel bequest.

A HARD CASE

A woman, intent on her work in a field, was struck dead by an aircraft carelessly flown near the ground. Her husband was partly dependent on her, and sued the pilot. If the same accident had happened before the war he would have had an unquestioned right, as her legal personal representative, to claim on behalf of her estate damages for the results of the pilot's negligence, and for himself damages based on his dependency. Unfortunately for him, he found in his way the Personal Injuries (Emergency Provisions) Act, 1939. This was passed on the first day of the war to compensate persons for war injuries which otherwise might not have given them ground for action. The definition of "war injuries" includes physical injuries caused by the impact of aircraft belonging to His Majesty. The Act expressly rules out the payment of damages for a war injury caused by negligence. Under the Personal Injuries (Civilians) Scheme made under the Act the husband had no right, for he was only partly dependent and not incapable of self-support and in need. Moreover, the scheme makes no provision by which a personal representative may claim compensation on behalf of the estate, nor does it allow funeral expenses. Mr. Justice Charles took the view that as the husband did not benefit under the scheme, it did not deprive him of his ordinary legal remedies, and gave judgment in his favour for £450. The Court of Appeal, however, declared he could not have this.[1] Lord Greene, Master of the Rolls, said that the argument seemed at first sight attractive, that it would be a remarkable thing for Parliament to take away a man's legal rights and give him nothing in exchange, and that to construe the Act in a way which would deprive injured persons of their ordinary rights where the scheme did nothing for them would be a very grave matter. Broadly speaking, he admitted, the court was very reluctant to construe an Act of Parliament as depriving a person of his normal rights. In the present case, however, certain broad considerations indicated the strong probability that the Legislature had meant precisely what it said. It seemed to have taken the view that existing statutes ought not to be regarded as having contemplated injuries arising out of the unusual conditions of war. The scheme of the Act was apparently to lift war injuries right out of the common law and existing legislation and give them special treatment. This seemed to his lordship a very sensible and business-like way of handling a totally unprecedented situation. The widower, however, is not likely to be much consoled by the court's approval of the Act and the Scheme. He might be pardoned for wondering whether his omission from its benefit was due not so much to the wisdom of Parliament as to preoccupation on the part of the draftsman.

[1] Billings v. Reed, (1944) 2 All E.R. 415.

Obituary

MICHAEL JAMES NOLAN, L.R.C.P.&S.I.

Dr. M. J. Nolan died on Dec. 27 at Newcastle, Co. Down, his place of retirement, at the age of 85. He had been resident medical superintendent of the Down Mental Hospital, Downpatrick, Northern Ireland, for 42 years, retiring in 1935.

He was educated at Crescent College, Limerick, his native town, and at the Royal College of Surgeons in Ireland. After qualifying he was for some five years in general practice in Limerick, and during part of that time deputized for the superintendent of Limerick Asylum during his absence from duty. This was the beginning of Dr. Nolan's life-long attachment to psychological medicine, and in 1888 he was appointed deputy resident medical superintendent to the Richmond Asylum, Dublin, now Grangegorman Mental Hospital, where he remained until his appointment as resident medical superintendent to Down Mental Hospital in 1893. During his 42 years there his hospital gradually became known as one of the foremost in Ireland, and this position was of Dr. Nolan's making, for he was in the old tradition of medical superintendents in the grand manner, and ran his institution with complete personal supervision of every detail.

When he first became associated with psychological medicine, little scientific work was done in the Irish mental hospitals, and few papers were published by Irish psychiatrists. Dr. Nolan changed all that, as he changed many other things: over all his professional life a series of papers on his specialty flowed from his pen, and he was co-editor of the seventh edition of the *Handbook for Mental Nurses*. He took a great part in what might be called medico-political work, and the application of the Asylums Officers' Superannuation Act to Ireland was largely due to him.

Many honours came his way. He was, for example, president of the Royal Medico-Psychological Association in 1924–5, and president of the Ulster Medical Society 1926–7, a Fellow of the Royal Society of Medicine, and a Fellow of the Royal Academy of Medicine in Ireland. He was a J.P. and a member of the executive council of the Magistrates' Association of Northern Ireland.

His interests were wide and included gardening and archaeology. His commanding, bearded presence made an instant impression, and a slight stutter was turned by him into an asset which told to effect in many of his anecdotes, which he was an adept in using to clinch a point. His wit and humour never deserted him, not even when he was afflicted with blindness over which his great courage enabled him to triumph, and later a paralysis was surmounted in the same fashion.

D. L.

W. ERNEST A. WORLEY, M.R.C.S.

In our issue of the *Supplement* of Dec. 30 we recorded the retirement after 25 years' service of Dr. Ernest Worley from the office of honorary secretary of the City Division of the B.M.A. and the presentation to him by his colleagues of a cheque and an illuminated address. We deeply regret to announce that he died on Dec. 28. He was a Bart's student and took his M.R.C.S., L.R.C.P. in 1899. He was temporary captain, R.A.M.C., in the last war. He joined the Association in 1911 and began his active work for his Division in 1921. He was chairman of the Division in 1931 and represented it at the A.R.M. on five occasions; was a member of Council from 1927 to 1933 and of several of its committees; and was honorary secretary of the Centenary Meeting, London, 1932.

Dr. ALFRED COX writes:

The death of Dr. Ernest Worley removes an ardent and devoted worker for the B.M.A. His loss will be most deeply felt in the City Division, of which he had been the very life and soul, as well as the secretary, for 25 years. He was one of those who never sought the limelight and made a hobby of B.M.A. work. I remember visits to the City Division, when I was in office, which convinced me, if I had needed any convincing, that so long as Worley was in charge the Division would be an active one. How he managed to conduct an active practice and at the same time devote so much energy to the Association is a mystery which I have never been able to solve except by recourse to the old saying that "a man can always find time to do something which he really wants to do." His finest achievement was when he cheerfully accepted the heavy responsibilities of the honorary secretaryship of the London Annual Meeting of 1932, and every day during the long period of preparation he could be seen at B.M.A. House. No detail was too small for his attention. I have been told that at the historic centennial dinner at the Albert Hall, where some 2,100 people sat down to dine, Worley personally inspected every table ticket to see that all the guests were rightly placed. In paying this affectionate tribute to

an old friend and fellow worker I must not forget (he never forgot) the devoted labours of his wife—not only socially but in the day-to-day work of the City Division.

The death took place on Nov. 28 of Dr. TIMOTHY HOWELL DAVIES, Pentrepoth Road, Morriston, Swansea. He was a member of a very well-known and old Morriston family, being the eldest son of the late James Davies, a founder director of the Morriston and Midland Tinplate Co. Ltd. Dr. Davies, popularly known as Tim, was educated at Arnold's College, Swansea, and, on entering the Middlesex Hospital, studied under, among others, the late Sir John Bland-Sutton. He qualified M.R.C.S., L.R.C.P. in 1907, and practised in Morriston up to the date of his death. Dr. Davies had intended retiring in 1939, but in view of the calls made on the medical profession continued in practice until his death. He was an ardent Welshman and an authority on the history of old Morriston.

The death occurred in Darlington on Dec. 15, in sudden and tragic circumstances, of GEORGE ALEXANDER DAWSON, medical officer of health for Darlington. A Belfast graduate (M.D., B.Ch., D.P.H.), he was formerly assistant M.O.H. for Oldham, and was appointed to the same post in Darlington in 1925, succeeding shortly thereafter his chief, who was killed motoring. Dr. Dawson was president of the Northern Branch of the Society of Medical Officers of Health in 1930–1, chairman of the Darlington Division of the B.M.A. in 1932, elected a Fellow of the Royal Sanitary Institute in 1935, chairman of the district council of Toc H, a past president of Rotary, and a past master in Freemasonry. He was a forceful personality with an unbounded capacity for work. He died a bachelor, 46 years of age, and public expression of loss has been wide and marked.

The death occurred at Harrogate on Dec. 16 after a brief illness of HAROLD DOBSON PICKLES, *M.C.*, M.R.C.S., L.R.C.P., at the early age of 53. He was the son of the late Dr. J. J. Pickles of Leeds and received his medical education at the Leeds Medical School, qualifying in 1915 and immediately joining the R.A.M.C. He served in France, being mentioned in dispatches and gaining the Military Cross, and settled in practice in Leeds in 1919. He subsequently practised at Westerham in Kent, but returned to his own county, to Masham, where he was also M.O.H. Dr. Pickles was one of the best type of general practitioner, at all times placing the interests of his patients before his own comfort and convenience, despite the handicap of increasing deafness and of a heart damaged by rheumatism in youth. He leaves a widow, one daughter, and two sons.

Dr. JAMES GRIFFITHS MACASKIE, formerly of Bambrugh, died on Jan. 3 at Seahouses, Northumberland, aged 89. He was born at Berwick-on-Tweed, went to school at Newcastle, and studied medicine at Edinburgh. He qualified L.R.C.P.&S.Ed. in 1878, took the D.P.H. in 1890, and joined the B.M.A. in 1904. He retired from active work in 1927 after 47 years' practice at Bambrugh, where he won the respect and esteem of all classes. Dr. Macaskie was for 44 years Poor Law medical officer and for 33 years M.O.H. for the Belford Rural District Council. In 1924 he was made a Justice of the Peace. His three sons all became members of the medical profession.

Dr. JEROME JOHN O'MULLANE of Plumstead High Street, S.E., died at the age of 52 at the London Clinic on Jan. 2. He graduated from University College, Cork, as M.B., B.Ch., and B.A.O. of the National University of Ireland in 1916, and served as house-surgeon at the West London Hospital. Dr. O'Mullane joined the British Medical Association in 1925. Although in bad health for some time past he was an energetic worker and an enthusiastic reader of current medical literature. His death will be a great loss to Woolwich.

Dr. GUSTAV SINGER, formerly emeritus professor of internal medicine at Vienna and an Austrian privy councillor, died in Guy's Hospital after a short illness at the beginning of December. He was especially interested in gastro-enterology, and in January, 1938, delivered a lecture in this country on functional diseases of the intestines. This was afterwards published by the Oxford Press as a monograph which we noticed in the *Journal* of May 25, 1940 (p. 854). Gustav Singer was a friend of the late Sir Arthur Hurst, who had much admiration for his work.

The following well-known medical men have died abroad: Dr. FREDERIC WILLIAM SCHLUTZ, chairman of the department of paediatrics of Chicago University, aged 63; and Dr. JOELLE CORNELIUS HIEBERT, clinical instructor in obstetrics at Boston University School of Medicine, aged 51.

Medical Notes in Parliament

G.M.C. Elections

On Dec. 14 Sir HAROLD WEBBE moved that the General Medical Council (Temporary Provisions) Order, 1944, a copy of which was presented on Dec. 5, should be annulled. He said he was told that the *Medical Register* might well contain as many as 44,000 names. An election was not an impossible business and was certainly not much more difficult than holding an ordinary by-election. It might be argued that in this case the council could not get a proper election because so many of the electors—the medical practitioners—were away serving the country in the Forces. He was sure that the Government would not use that argument, because the House had already decided that the absence of all these doctors in the Forces was no valid reason for postponing legislation which fundamentally affected the whole medical service and drastically and vitally affected the future of every one of them.

Mr. ATTLEE, in reply, agreed that, wherever we could and wherever it was feasible, we should restore the right of elections. These postponements were not something which was imposed on various bodies by the Government, but was done at the request of those bodies. It was necessary, however, to see that they did not perpetuate themselves unnecessarily. These Orders were not granted as a matter of course; they were examined very carefully. The G.M.C. had 39 members, of which 32 were nominated with the advice of the Privy Council or chosen by certain colleges and universities, who might be held to be mainly indirect representatives of the medical profession. Seven were elected by medical practitioners. The latest available figures showed that the electorate numbered somewhere about 65,000. The strain on the medical profession at the present time was immense. The strain on the G.M.C. had been pretty heavy. People did not know where a large proportion of the 65,000 doctors were. A large proportion were over-seas. A great many of the others had been moved about the country according to the exigencies of the war. Even in normal times this election was fairly costly. A single election cost about £500 and sometimes there had to be two or three a year. The staff of the council had been very greatly reduced. It would be very difficult and involve an unnecessary amount of time if the election papers were to reach all members of the profession.

Dr. RUSSELL THOMAS said he would like to emphasize the fact that Mr. Attlee, on behalf of the Government, had made it perfectly clear that the medical profession could not be expected to come to any decision on any matter at the present time. He was grateful to him for making his decision so clear.

The motion was, by leave, withdrawn.

Medical Research Expenditure

In a written answer on Dec. 21 to Sir Ernest Graham-Little, Mr. ATTLEE said it was impossible to give a comprehensive estimate of current annual expenditure on medical research in this country. Investigations were financed not only out of public moneys but also by private funds administered by universities and hospitals and by independent research institutes and organizations. Only a relatively small part of the total expenditure from funds of private origin was controlled by the Medical Research Council. The expenditure of the Medical Research Council amounted to about £290,000 in 1944–5. Of this, £250,000 was provided by the Parliamentary grant-in-aid and the remainder from contributions and repayments from various Government Departments and sundry credits. The expenditure directly allotted to medical research through other Government channels was at present about £100,000 a year, mainly on special investigations by the Services into war problems. This took no account of research undertaken by members of the medical services with the armed Forces and otherwise, in addition to other duties for which they were primarily employed. Nor did it take account of research done by institutions in receipt of Government grants for mainly educational work.

Demobilization

Mr. BEVIN stated on Dec. 21 that the scheme outlined in the White Paper on the reallocation of man-power between the armed Forces and civilian employment during any interim period between the defeat of Germany and the defeat of Japan (Cmd. 6548) applied to medical officers in the same way as to other members of the Forces. There was provision in para. 12 of the White Paper for the release in Class B—i.e., out of age and service order—of a limited number of individuals on applications made through Government Depart-

ments in accordance with the existing arrangements. In the case of medical officers these arrangements provided for recommendations to be made by the Central Medical War Committee.

Promotion in P.O.W. Camps.—Sir JAMES GRIGG informed Sir George Elliston on Dec. 13 that he did not consider special arrangements should be made to permit normal opportunities of promotion for medical and dental officers of the R.A.M.C. detained in enemy prisoner-of-war camps for the care of British prisoners. Time promotion was carried out under the normal rules for all officers who were prisoners of war.

Midwives in the Services.—Mr. WILLINK told Mr. Storey on Dec. 14 that he had considered the recommendations sent to him last August by the Northern Branch of the B.M.A. that trained midwives should no longer be accepted for the Services or industry and that those already accepted should be released or directed to their proper work. He had consulted the Minister of Labour and National Service and had communicated with the B.M.A. The nursing services of the Crown had, since May, 1943, been precluded from recruiting practising or newly qualified midwives or midwives with recent experience. Similarly as regards industrial nursing, experienced or practising midwives were not admitted to posts unless they were immobile and there was no prospect of using their services in local midwifery work. A review of all qualified midwives already employed in industry had already been made. Those with good or recent experience were withdrawn, though there was sometimes a little delay. In view of operational needs and the fact that any midwives now in the Services must have qualified some time ago and be scattered over the world, he could not press the Service Departments to release them at present.

Notes in Brief

It is expected that the factory at Speke, Liverpool, for production of penicillin will be completed by the late spring of 1945.

It is hoped that in 1945 8,000 acres in India will be under cinchona. Before the war 4,500 acres were planted with cinchona. The supply of quinine is unequal to the demand, but synthetic antimalarial drugs are reaching India in large quantities.

Since the increase in cash allowances to fighting men's children, issues at cheap rates of fruit juices and cod-liver oil to children have declined by 15% and 25% respectively comparing August and September with the previous six-months average. There is no evidence that families not entitled to free supplies cannot meet this expenditure. Issues of milk free or at cheap rates have not declined.

The Services

Major-Gen. N. Cantlie, M.C., late R.A.M.C., has been appointed Honorary Physician to the King in succession to Col. (Local Brig.) S. Smith, late R.A.M.C. (ret.).

Capts. C. T. A. Burgess and A. A. Grierson and Lieut. O. Gray, R.A.M.C., have been appointed M.B.E. (Military Division) in recognition of gallant conduct in carrying out hazardous work in a very brave manner.

Temp. Surg. Lieut. I. R. W. Alexander, R.N.V.R., has been mentioned in dispatches. This name appears in a list of awards for gallantry or good services in the last six months or more of war in certain of H.M. ships.

Majors E. L. Elliott, 4th Btn. Buckinghamshire Home Guard, N. J. Cochran, 8th Btn. Staffordshire Home Guard, P. W. Edwards, 16th Btn. Staffordshire Home Guard, and A. W. Marrison, 3rd Lindsey Btn. Home Guard, have been appointed M.B.E. (Military Division) in recognition of meritorious service in the Home Guard.

Major C. M. Russell, 32nd Btn. County of London Home Guard, has been appointed M.B.E. (Military Division) in recognition of meritorious service in the Home Guard.

CASUALTIES IN THE MEDICAL SERVICES

Died on active service.—Lieut.-Col. Ernest F. Waldemar Grellier, R.A.M.C.

Wounded.—War Subs. Capts. H. I. C. Bowie and J. C. D. Mellor, R.A.M.C.

Wounded or injured.—Temp. Surg. Lieut. K. V. J. Kearney, R.N.V.R.

DEATHS IN THE SERVICES

Surg. Rear-Adml. THOMAS CREASER, who died on Dec. 15, graduated in medicine at Dublin University in 1904 and proceeded M.D. three years later. After holding house appointments he entered the Navy in 1907. He took part in the Battle of Jutland when serving in H.M.S. *Boadicea*, and was professor of clinical pathology at the R.N. Medical School, Greenwich, in 1924–7; then for two years he held the post of squadron medical officer of the Battle-cruiser Squadron in H.M.S. *Hood*. He was in charge of the R.N. Hospital at Haslar from 1937 until the end of 1940. For more than a year before his retirement Adml. Creaser was Honorary Physician to the King.

Medical News

The Eugenics Society has arranged a meeting at the rooms of the Royal Society, Burlington House, Piccadilly, W., on Tuesday, Jan. 16, at 5 o'clock, when Mr. Cecil Binney will speak on "Eugenics and Criminal Law." All interested in the subject are invited to attend.

The following meetings of the British Institute of Radiology have been arranged for January and will take place in the Reid-Knox Hall, 32, Welbeck Street, London, W. Thursday, Jan. 18, at 8 p.m., ordinary meeting followed by a "Symposium on Clinical Photography." Speakers: Mr. T. Pomfret Kilner, Mr. Stevenson Clark, Miss Shaw, Mr. F. W. Coppin. Friday, Jan. 19, at 5 p.m., meeting of medical members.

The Diagnosis Section of the Faculty of Radiologists will hold a meeting on Friday, Jan. 19, at 2.15 p.m. at the Royal College of Surgeons, Lincoln's Inn Fields, when Surg. Rear-Adml. Robert Milne is to read a paper on "Avascular Necrosis with Joint Trouble in Caisson Workers."

At a general meeting of the Tuberculosis Association to be held at 26, Portland Place, London, W., on Friday next, Jan. 19, at 3.30 p.m., papers will be read by Dr. E. T. Fletcher on ankylosing spondylitis and tuberculosis; by Dr. R. B. Illing on the prognosis of chronic miliary tuberculosis in children; and by Dr. M. C. Wilkinson on the nature of resistance in tuberculosis.

The Food Education Society (29, Gordon Square, W.C.1) announces that Dame Louise McIlroy, M.D., will lecture on "Food and Maternal Morbidity and Mortality," on Jan. 22, at 2.30 p.m., at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C.

A meeting of the Scottish Group of the Association of Industrial Medical Officers will be held on Wednesday, Jan. 24, at 3 p.m. prompt in the Institute of Hygiene, University of Glasgow. The business of the meeting, at which Dr. H. M. Roberts will preside, will be general, and all interested in industry are invited.

The British Federation of Social Workers has arranged six lectures on "The Background to Health," to be given in Alliance Hall, Palmer Street, Westminster, S.W., on Wednesdays, Jan. 24 and 31, Feb. 14 and 28, and March 14 and 28. The January lectures will be by Prof. J. M. Mackintosh, on "What is Social Medicine?" and Mr. R. Watson-Jones, on "Rehabilitation." Application for tickets (1s. 6d. each lecture, 7s. 6d. for the course) should be made to the hon. secretary of the Federation (5, Victoria Street, S.W.1).

A meeting of the Association of Industrial Medical Officers will be held in Birmingham on Thursday and Friday, Jan. 25 and 26. Programme: Thursday, 8.30 p.m., business meeting, Queen's Hotel, New Street Station. Friday, 9.30 a.m., organized visits to iron foundries in the area. 2.30 p.m. at gymnasium of the Birmingham Accident Hospital, Bath Row, papers will be read by: (1) a representative of the Council of the Iron Foundries Association, on "Iron Foundries"; (2) Dr. G. F. Keatinge, medical officer, The Butterley Co. Ltd., Derby, "Health in Iron Foundries." After the papers there will be a discussion.

The Association of Clinical Pathologists will hold a meeting in London on Friday and Saturday, Jan. 26 and 27, at 9 30 a.m. at the Westminster Hospital School of Medicine.

The Royal Sanitary Institute announces the following sessional meetings: Jan. 27, at 10.30 a.m. in the Council Chamber, Town Hall, Sheffield; papers on "Some Aspects of Water Supply," by Mr. J. Noel Wood, general manager and engineer, Sheffield Corporation Waterworks; and "A Review of the Treatment of Cerebrospinal Fever," by Dr. J. M. Kennedy, medical superintendent, Lodge Moor Hospital, Sheffield. Feb. 14, at 2.30 p.m. at the Institute (90, Buckingham Palace Road, S.W.1), papers on "Ventilation of Dwellings," by Dr. T. Bedford, of the Industrial Health Research Board, and Dr. J. Greenwood Wilson, M.O.H. Cardiff. March 2, at 3 p.m. at the Public Library, Turners Hill, Cheshunt, papers on "Post-War Housing Requirements."

Mr. Desmond MacCarthy, LL.D., will deliver the Lloyd Roberts Lecture at 3 p.m. on Tuesday, Jan. 30, at the Royal College of Physicians, Pall Mall East, S.W. Subject: "Psychology in Literature."

Doctors will shortly receive a copy of the Ministry of Food's new booklet (M.E.D.2), which supersedes earlier issues, on special rations and allowances to invalids and persons requiring special diets. Further copies may be obtained on application to the Ministry of Food, Welfare (Foods) Branch, Mount Stewart Hotel, Colwyn Bay.

The Ministry of Food announces that dried bananas are available, in amounts up to 14 lb. a month, for adult patients with steatorrhoea. Applications should be made to the local Food Office, accompanied by proof that steatorrhoea is present, such proof including an analysis of the patient's stools for fat.

No. 51

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Dec. 23.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	33	2	12		—	53	6	22	2	3
Deaths		2	1				3	—		
Diphtheria	456	23	117		20	498	25	134	80	24
Deaths	5	—	1	—	—	9	—	4	2	—
Dysentery	173	44	133		—	96	29	69	1	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	1	—	—		—	2	—	—	—	—
Deaths		—					—			
Erysipelas			52		2			55	3	—
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years									9	
Deaths	52	3	6	12	2	43	2	4	1	1
Measles*	8,433	163	339		248	363	36	53	28	—
Deaths	13	—	1	—	—	1	1	1	1	—
Ophthalmia neonatorum	53	4	13		—	66	6	17	—	—
Deaths										
Paratyphoid fever	3	—	1 (B)		—	1	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal†	715	28	10		13	2,079	119	83	16	8
Deaths (from influenza)	28	4	3	—	—	690	80	48	5	8
Pneumonia, primary								511	20	
Deaths		41		18	18		124		9	17
Polio-encephalitis, acute	—	—				3	—			
Deaths		—					—			
Poliomyelitis, acute	5	1	—		—	5	1	—	2	—
Deaths		—					—			
Puerperal fever		1	15		1		1	10		1
Deaths										
Puerperal pyrexia‡	130	4	11		—	105	4	22	1	2
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,906	52	216		44	1,786	87	242	25	84
Deaths	3	1	—	—	—	1	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths			—	—				—	—	
Typhoid fever	5	—	2		3	2	1	1	2	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—		—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,317	53	117		10	1,244	99	130	21	16
Deaths	10	—	4	1	—	17	4	5	3	1
Deaths (0–1 year)	420	37	75	45	31	452	51	84	19	22
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	5,354	785	717	223	164	7,011	1,122	787	237	175
Annual death rate (per 1,000 persons living)			16·5	14·5	§			17·7	15·6	§
Live births	6,857	605	89	279	257	5,606	676	799	230	222
Annual rate per 1,000 persons living			18·1	18·1	§			16·3	15·1	§
Stillbirths	202	20	27			185	19	34		
Rate per 1,000 total births (including stillborn)			29					41		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* infectious diseases were generally less prevalent. Last week's notifications fell by the following figures: measles 552, scarlet fever 84, dysentery 28, whooping-cough 26.

There was little change in the local trends of scarlet fever and whooping-cough. Lancashire had 24 fewer cases of diphtheria than last week, but Yorks West Riding had 12 more. The fall in measles ends a continuous rise of fifteen weeks; in the counties notifications dropped by the following numbers: Lancashire 240, Durham 120, Wiltshire 86, Cumberland 77, Northumberland 53, Middlesex 51; on the other hand, the following increases were reported: Warwickshire 105, Yorks West Riding 86, Nottinghamshire 56, London 49. The incidence of dysentery is now at less than half the total of a month ago. The chief centres of infection were London 44, Lancashire 34, Gloucestershire 10, and Yorks West Riding 10, the remaining cases being recorded from twenty-eight counties.

In *Scotland* all the common infectious diseases of childhood were less prevalent—measles by 189 cases, scarlet fever by 79, diphtheria by 25, and whooping-cough by 17. For the second week a relatively large rise occurred in the notifications of dysentery, due to an outbreak in Lanark County, where the cases mounted from 13 to 61. The incidence of dysentery fell in most areas, and the only other large centre of infection was Glasgow 27.

In *Northern Ireland* notifications of scarlet fever continued to fall, the total now being 44, compared with 117 at the end of November. The incidence of measles is dropping more slowly, 248 cases being recorded, compared with 273 four weeks ago.

Infectious Diseases during 1944

The chief features of the returns of England and Wales during the past year were the high level of dysentery and the low level of diphtheria. The notifications of dysentery have steadily risen throughout the war, and this disease has now become endemic in most of the country. The notifications of diphtheria have steadily fallen since 1941, and the total for 1944 was the lowest ever recorded. The lowest number of cases since the war was also recorded for measles, acute pneumonia, cerebrospinal fever, and enteric fever. A comparison of the war years is given in the following table:

Notifications of Infectious Diseases in England and Wales during the War

	1940	1941	1942	1943	1944
Scarlet fever	65,573	59,111	84,932	116,217	93,801
Whooping-cough	53,403	171,406	65,563	95,859	93,107
Diphtheria	46,683	51,091	42,318	35,944	29,446
Measles	407,908	406,507	285,300	374,198	117,437
Acute pneumonia	47,712	50,514	42,487	52,225	38,175
Cerebrospinal fever	12,791	11,119	6,089	3,380	2,883
Dysentery	2,843	6,597	7,177	7,772	10,150
Enteric (paratyphoid and typhoid)	2,824	4,703	887	707	536

Notifications of cerebrospinal fever, which fell rapidly after the large outbreak at the beginning of the war, have improved only slightly on the 1943 level and are now two or three times the pre-war figure. Figures for deaths from influenza are at present available only for the large towns. The rather light mortality from influenza in the past year was due to the unusually early appearance of the epidemic in the late autumn of 1943, which increased the deaths of 1943 by over 4,000.

Deaths from Influenza and from Diarrhoea and Enteritis, and Infant Mortality Rate, in the 126 Great Towns

	1940	1941	1942	1943	1944
Influenza deaths	5,510	2,993	1,544	6,280	1,746
Infant mortality rate	62	71	58	58	52
Diarrhoea and enteritis deaths under 2 years	1,754	1,785	2,268	2,582	2,55

The figure for infant mortality is the lowest for the war years, despite the increasing number of deaths due to diarrhoea and enteritis.

Week Ending December 30

The returns of infectious diseases in England and Wales during the week included: scarlet fever 1,512, whooping-cough 1,179, diphtheria 446, measles 8,870, acute pneumonia 9[illegible], cerebrospinal fever 38, dysentery 123, paratyphoid 6, typhoid

Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS should communicate with the Publishing Manager, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS should be addressed to the Advertisement Manager, B.M.A. House, Tavistock Square, London, W.C.1 (hours 9 a.m. to 5 p.m.). TELEPHONE: EUSTON 2111. TELEGRAMS: *Articulate Westcent, London.*

MEMBERS' SUBSCRIPTIONS should be sent to the SECRETARY of the Association. TELEPHONE: EUSTON 2111. TELEGRAMS: *Medisecra Westcent, London.*

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

ANY QUESTIONS?

Severe Seborrhoea

Q.—*During the past 6 to 8 weeks I have been treating four patients for severe seborrhoea. No treatment, however, seems to improve the cases. The scalps are reddened and slightly irritable, with a great weeping of sebum. Consequently the scalp is covered with an abundance of scales. Added to this is a great loss of hair with threatened alopecia. I would appreciate advice.*

A.—The writer describes an eczematized seborrhoea, a sensitive condition which is unable to tolerate 10% sulphur. If circumstances permit the hair should be clipped short, a boric-starch poultice applied for 6 hours to clear up the mess, followed by a wet dressing such as lead-glycerin lotion, later disinfecting with H_2O_2 (5 vols.), oily calamine lotion being subsequently applied. When the eczema has been controlled, more active remedies can be tried very cautiously, probably avoiding sulphur, even the customary 5% concentration.

Allergy to Milk

Q.—*My son, aged 11, strong and healthy, has lately developed chronic nasal catarrh, apparently coincident with his drinking a lot of milk: until lately he did not like milk. His mother, during his pregnancy, developed pernicious anaemia of pregnancy, which was controlled by liver injections. During her second pregnancy she became sensitive to the liver. Is there any connexion in the sense that this catarrh may possibly be of an allergic type, and if so, what diet for such a growing boy could be advised?*

A.—Chronic nasal catarrh is an ill-defined entity. Congestion of the nasal mucosa may be due to septal deviation, sinus infection, adenoid vegetation, or constant exposure to a damp or dusty atmosphere. Before ascribing it to drinking milk one would demand more typical allergic symptoms, such as attacks of sneezing, lacrimation, and rhinorrhoea, and an excess of eosinophil leucocytes in films of the blood and nasal secretion. Other symptoms of food allergy, such as abdominal pain and diarrhoea, might also be expected. Furthermore, an allergic rhinitis should disappear when the allergen is removed and reappear when it is returned to the diet. In practice an elimination test is not easy to perform as milk comes into the composition of so many foods—not only milk, cream, butter, and cheese, but also bread, pastries, and margarine. Milk-free diets for the diagnosis of milk allergy may be obtained from A. H. Rowe's book, *Food Allergy*, London, 1931. Quite frankly, then, the diagnosis of milk allergy does not seem to be well established in this case, and even if it were one would conclude that in so far as the symptoms are mild and there is no alimentary upset it would be better to put up with the nasal catarrh than with a milk-free diet. Such diets are difficult to arrange in wartime, and introduce the danger of shortages of biological protein, vitamin D, calcium, etc. A compromise would be to let the boy drink goat's milk or well-boiled cow's milk. It is not easy to see any connexion between the boy's illness and his mother's. The development of sensitivity to liver given by injection does not appear to have any clear relation to spontaneous food allergy.

Effects of Sexual Continence

Q.—*Is it known what happens to the semen when it is retained in the body? Leaving aside the psychological effects, it is evident that different physiological adjustments must take place in the completely continent individual from those that occur in the man who lives a life of regular elimination of semen. Is there any evidence that continued or temporary retention causes any bodily ill effects?*

A.—Not much is known about this subject, but I do not believe that there is any evidence that continued voluntary abstinence causes any bodily ill effects. Not infrequently intermittent, spontaneous, and involuntary emissions occur during sleep in otherwise completely continent individuals. The ejaculation of semen, which is stored in the seminal vesicles, is usually a stimulus to further production of semen by the testes. Assuming that the semen stored in the seminal vesicles were retained indefinitely, and not spontaneously emitted from time to time, it might undergo degenerative changes, but it is doubtful (*a*) whether this occurs; or (*b*) if it does occur, whether it has any harmful effect on the body.

Psychological results of attempted complete continence are a different matter, but more often than not it is the psychological make-up of the individual which determines whether or not he will attempt to be completely continent. In other words, attempted voluntary continence is only one aspect of the whole picture.

Adrenaline Injections

Q.—*(a) Are there any ill effects caused by prolonged injections of adrenaline for asthma? (b) Is an injection of 1/2 c.cm. (1-1,000) every 5 or 6 hours, for some days if necessary, to control attacks, harmful in any way?*

A.—Although albuminuria has been observed in animals no ill effects have been reported in man, even though adrenaline has been injected every few hours for years on end. Of course sepsis may occur from neglect of sterile precautions, but it is surprisingly uncommon. In addition there may be shock-like symptoms if the adrenaline is maladroitly injected into a vein. Extremely rarely a sensitization to adrenaline may develop which expresses itself in localized atrophy and scar formation. No harm need therefore be anticipated from an injection of 1/2 c.cm. of 1-1,000 adrenaline every 5 to 6 hours for some days, though it might be wiser and more effective to use 1/4 c.cm. every 2 to 3 hours, the guiding principle in the adrenaline treatment of asthma being "little and often."

Coarse Tremor in the Elderly

Q.—*An elderly lady has recently developed a very coarse tremor of both hands. This makes eating and the performance of simple tasks very difficult. Only the wrists and hands are affected; there is no evidence of Parkinsonism; and her general health, mentally and physically, is good. Hyoscine hydrobrom. gr. 1/200 t.d.s. is without effect; bromide makes no difference. The movements stop during sleep. Is any other treatment likely to benefit?*

A.—The coarse senile tremor described in this question is very resistant to the drugs used in Parkinsonism. Belladonna, stramonium, and hyoscine have their main effect on the rigidity of the muscles, and do not improve the tremor of Parkinsonism. I cannot suggest any medicinal treatment which will help these patients, but one is usually impressed by the skill with which the patients continue their daily lives in spite of the tremor.

Late Walking

Q.—*What are the causes and elucidation of the case of a child aged 2 years who is stated by the mother never to have walked yet? I can find no abnormal physical signs and the child appears intelligent enough for its age.*

A.—Late walking is sometimes a familial failing and in such cases nothing to worry about. But before this optimistic diagnosis is reached two groups must be carefully excluded—those with mechanical causes, and those with mental defect. Under the former come such causes as congenital dislocation of the hip—often difficult to detect without *x*-ray examination if bilateral—rickets, and other causes of muscular hypotonia, including the serious dystrophies. Mental defect of a mild degree is by no means easy to exclude. In the present case the clue lies in the dates at which the child passed earlier milestones—e.g., holding up of head by three months, sitting up by six months. In out-patient experience mental defect is the commonest cause of late walking.

Infections in Pregnancy

Q.—*Is there any evidence for the belief—which I share—that pregnant women are less liable to incur the common infectious fevers (including whooping-cough and mumps) than non-pregnant women? (It is assumed, of course, that they have not previously suffered from the disease in question.) Furthermore, is there any particular danger to the breasts or ovaries of the pregnant woman aged 35 exposed to mumps infection?*

A.—The belief that a pregnant woman is less liable to incur infectious fevers appears to have arisen from observations made in respect of scarlet fever and as a result of confusion between scarlet fever and scarlatinal rashes occurring in association with streptococcal puerperal infections. It was noted that women sometimes developed such rashes and pyrexia a few days after delivery, and, on the assumption that they suffered from scarlet fever, it was argued that, having been immune to the disease during pregnancy, these women became susceptible again after delivery. Braxton Hicks, amongst others, published observations of this kind and reached conclusions to this effect in the latter part of the nineteenth century. Although many of the older writers commented that scarlet fever is rare during pregnancy—and the cases reported are certainly few in number—yet

there is no definite evidence to show that pregnancy confers any sort of immunity to scarlet fever and the other infectious diseases. The majority would agree with the following statement which appears in DeLee's *Principles and Practice of Obstetrics* (seventh edition, 1938): "A pregnant woman is not immune to any disease which may affect her in the non-pregnant state, and, contrary to the old notion, she is more susceptible to some." One of my own patients recently contracted whooping-cough during pregnancy.

Mastitis and oophoritis are among the rare complications of mumps at any time, and there is no reason to believe that the breasts or ovaries are in any special danger if mumps is contracted during pregnancy.

Diagnosis of Coronary Thrombosis

Q.—*What are the main clinical points in the diagnosis of coronary thrombosis? What is the differential diagnosis, and what electrocardiographic changes clinch the diagnosis?*

A.—A concise description cannot be of any real practical value; such a common and important disease deserves at least careful study of a full account in a textbook. Myocardial infarction, resulting as a rule from coronary thrombosis, may cause acute substernal pain, of a crushing, burning character, the onset of which is frequently at rest or during sleep. The pain may radiate to either arm or to the neck or to the back; it is not relieved by cessation of activity, nor by nitrites. Its duration may be from hours to days. It is often associated with vomiting. The damage to the myocardium may cause acute failure, shown by severe dyspnoea. There may be grave shock, marked by ashy pallor, fast pulse, low blood pressure, sweating, and a subnormal temperature. Illness, fever, leucocytosis commonly follow the attack. Syncope may occur at the time of onset. Physical signs may be inconspicuous. The mitral first sound may become weak; gallop rhythm may appear; some new enlargement to the left may be detectable. Sudden signs of failure shown by oedema of the bases of the lungs and venous engorgement may be seen. A pericardial rub is sometimes heard later.

In a fairly high proportion of cases the condition is painless: dyspnoea, or vomiting even to acidosis, may dominate the picture. Although coronary occlusion may occur during exertion, persistence of the pain on rest serves to differentiate from angina of effort. Severe substernal pain at rest may be provoked by a rise in pulse rate and blood pressure. But it is controlled by nitrites. A mild case may masquerade as one of severe indigestion, but careful inquiry and the usual sequelae given above should distinguish it. Sometimes the symptoms are so mild that the patient forgets all about it.

Dissecting aneurysm of the aorta causes similar pain. It is rarely survived, and is almost always associated with hypertension. The aneurysm should show in the skiagram later if one can be taken. Gall-bladder colic and a perforation of a peptic ulcer produce upper abdominal pain which may be partly thoracic and cause great rigidity of the abdominal muscles. Vomiting may occur with either, and shock is conspicuous in perforation. Diaphragmatic pleurisy may cause intense epigastric pain and great restriction in breathing, with rigidity of abdominal muscles. Spontaneous pneumothorax causes thoracic pain—usually to one side—dyspnoea, and its own peculiar signs.

The electrocardiographic changes are recognized as two main types, depending on whether the infarct is at the front or the back of the left ventricle. In the early stages of the former there is positive deviation of the RST phase from the isoelectric line. This is soon followed by T1 negativity, which is often marked by the typical Q1 T1 pattern. In Lead 3 the converse is seen. 4R, and better 4F, show a negative T wave, and may be diagnostic when the limb leads are doubtful. In posterior infarction there is positive RST deviation in Lead 3, often followed by a negative Q3 T3 pattern. Lead 1 shows the converse. Lead 2 tends to follow Lead 3, and the precordial leads are rarely affected, except for enhanced T voltage. In some cases these changes give place to normal appearances; in others they remain as long as the patient lives, or until another infarction alters them.

? Fröhlich's Syndrome

Q.—*A man aged 22 years had an operation ten years ago for non-descended testis. Both testes are down in his scrotum now, but of a small size—cherry-stone. He weighs 10 st. 12 lb., and his fat is of feminine distribution. There is no axillary hair, but a few hairs over the pubis have developed since the administration of 10 mg. testosterone propionate twice weekly. No libido. What is the prognosis?*

A.—The diagnosis may be Fröhlich's syndrome, in which case the small infantile testes are due to a deficiency of pituitary gonadotrophic hormone; or the condition may be eunuchoidism, there being a primary hypogonadism. In both cases testosterone would produce secondary sexual characteristics—e.g., pubic and facial hair, enlargement of the penis, libido with erections, and potency. The dosage, however, should be greater than that used—e.g., 25 mg. injected three times weekly. Alternatively, 5 mg. of methyl testosterone sublingually three times a day; or the implantation of 600 or 800 mg. of testosterone propionate subcutaneously. These forms of therapy, however, would not induce development of the testes nor would they render a patient fertile as distinct from potent. In eunuchoidism gonadotrophic hormone is of no avail; but in Fröhlich's syndrome, or in any case where the primary lesion is pituitary deficiency, gonadotrophic hormone, 500 units twice weekly for six weeks, may cause development of the testes and associated secondary sexual characteristics. The therapy would probably have to be repeated intermittently to maintain this condition, and a combination of this therapy, together with testosterone, is advisable.

Attempts to develop the germinal epithelium and spermatogenesis by gonadotrophic hormone of pregnant mares' serum, or of the pituitary gland, are not likely to be successful in the majority of cases, but could be tried.

About Sulphonamides

Q.—*The M.R.C. War Memorandum No. 10 on the medical use of sulphonamides states that "solutions of the sodium salts of sulphonamides must never be injected intrathecally." A modern textbook, referring to cerebrospinal fever, states: "The intrathecal route is no longer used for therapy; intrathecal serotherapy is ineffective; intrathecal sulphonamide therapy is dangerous, and must never be considered." (a) What damage is likely to occur if sulphonamides or their sodium salts are injected intrathecally? (b) Is it permissible to administer in this way sulphonamides or their sodium salts under exceptional circumstances? (c) Is the dosage recommended in the M.R.C. Memorandum now out of date, and may considerably larger doses be properly given with safety? If so, by how much may they be increased?*

A.—The highly soluble sodium salts of the sulphonamides are strongly alkaline, and will cause necrosis if injected into any tissue; they are therefore suitable only for intravenous administration. In the early days of the sulphonamide treatment of meningitis a 0.8% solution of sulphanilamide was injected intrathecally: contrary to the statement quoted, this proceeding is safe if properly carried out. The other sulphonamides are relatively so insoluble that little is to be gained in this way, but Somers (*Lancet*, 1939, **1**, 921) described the successful treatment of Sudanese natives with cerebrospinal fever under most primitive conditions by injecting a *suspension* of sulphapyridine intrathecally. The method has been given up because it is now well known that an adequate concentration of the drug is rapidly produced in the cerebrospinal fluid by oral or other simple methods of administration.

We know of no reasons for supposing that the dosage recommended in M.R.C. War Memorandum No. 10 is inadequate. The only authoritative statement conflicting in any way with its recommendations is a recent report of the Department of Health for Scotland on the treatment of cerebrospinal fever, and the point of difference is the superiority of sulphanilamide over the other drugs in the extensive Scottish experience quoted. The effect of the scale of dosage seemed to vary at different age periods, and by no means pointed to any necessity for a general and considerable increase. These facts were mentioned in a full review of this report in the *Journal* of Oct. 7, 1944 (p. 475).

It is not clear whether the question refers only to cerebrospinal fever or embraces the treatment of other forms of purulent meningitis. The proper treatment of streptococcal, pneumococcal, and staphylococcal meningitis, especially if resistant to sulphonamides, is by the intrathecal injection of a solution of penicillin, reinforced if necessary by intramuscular administration.

Progesterone for Sterility and Abortion

Q.—*What is the technique of giving corpus luteum hormone, and dosage, in cases of sterility and habitual abortion?*

A.—The problem of sterility is extremely complex, and in many cases no cause can be found. It has been shown that in some cases even when the menstrual periods are apparently regular and normal ovulation does not occur and a secretory endometrium is never formed. It is difficult to imagine, however, how the administration of corpus luteum hormone could help such cases, which are due to failure of ovulation. It may be that other cases of sterility are caused by a deficiency of the corpus luteum, and thus the endometrium is improperly prepared for the reception of the fertilized ovum. Such cases may benefit from the administration of corpus luteum hormone in the second half of the menstrual cycle. Three to five units (3 to 5 mg.) should be given twice weekly in the form night before menstruation is expected.

Habitual abortion is also a condition which may arise from a variety of causes. Some authorities believe that in many cases abortion takes place because of deficiency in the secretion of corpus luteum hormone. In such cases progesterone may be given. The usual dose is 5 units (5 mg.) twice or thrice weekly until the 16th week of pregnancy. Larger doses—10 or even 20 mg.—are recom-

mended by some authors, and others state that treatment should be continued until the 34th week of pregnancy.

The doses given refer to progesterone administered by injection. There is a preparation—pregneninolone (ethisterone)—which has the action of progesterone when given by mouth; but when this is used the dose is five to six times the amount required when progesterone is given intramuscularly.

Pityriasis Rubra

Q.—*What is the correct treatment and prognosis of a case of pityriasis rubra in a man of 60 following a course of myocrisin (1.2 g. in all)? The condition has been present for six months and large areas are clear, but the scaling persists on the face, the legs, and in the flexures. He has had intravenous thiosulphate, autohaemotherapy, and other treatment.*

A.—If, as seems from the question, the eruption is clearing or has cleared from many areas, recovery is possible. Treatment should be of the simplest kind, such as boric-vaseline or other non-irritating applications. The general condition of the patient requires constant attention, including a search for focal infection. In some cases vitamin B_2 complex has appeared to help. Occupational therapy is desirable to counteract the introspective habit.

Cerebral Thrombosis

Q.—*A woman aged 70 had about three weeks ago an attack of what must have been a slight cerebral thrombosis. She did not lose consciousness or muscular power in the limbs. Present symptom is aphemia and some diminution of visual acuity, due, presumably, to central causes, as no improvement in regard to small types can be obtained by increasing presbyopic correction. She has always been active and healthy. B.P. is 170. Urine normal. What is the prognosis in respect of the speech defect at her age? Is she at all likely to recover?*

A.—On the description one would agree with the diagnosis of cerebral thrombosis. At the age of 70 the prognosis in the speech defect is unfavourable and recovery unlikely, although ability to say isolated words such as "yes" and "no" may return. On the other hand, further thromboses are likely to occur at a later date. The diminution in visual perception may be associated with a similar vascular lesion or reduced vascularity at or near the occipital pole—the centre for macular vision.

Action of Ethylene Diamine

Q.—*What is the action of the ethylene diamine in cardophylin? Has this preparation really any effect on the respiratory centre, and does it actually possess its reputed action in Cheyne-Stokes respiration?*

A.—Cardophylin, also known as aminophylline or euphyllin, is a combination of theophylline with ethylene diamine. The action of the ethylene diamine is to enhance the effect of the theophylline. Van Heerswynghels[1] showed that, in anaesthetized dogs, the stimulation of respiration produced by an intravenous injection of the compound was greater than the summation of the two drugs given simultaneously. A similar finding was described by Young and Gilbert[2] on the rabbit's bronchiole, when theophylline-ethylene-diamine had a protective action against histamine, but no comparable effect was shown by either drug given alone. The compound is believed to exert a direct chemical stimulation on the respiratory centre, although some workers attribute its effect to an increase in cerebral circulation. Marais and McMichael,[3] however, argue that, if it were a vascular effect, a vasodilatation of the cerebral vessels would cause diminished ventilation in normal subjects; this is not the case. Theophylline with ethylene diamine restores normal respiratory rhythm in Cheyne-Stokes respiration in animals and in man. Ethylene diamine, in man, produces an intense hyperpnoea, while theophylline has only a temporary effect. Their combination causes a more prolonged abolition of periodic breathing, sometimes for a number of hours.

REFERENCES

1 *Arch. intern. Pharmacodyn. Therap.*, 1937, **56**, 283.
2 *J. Amer. med. Ass.*, 1940, **114**, 522.
3 *Lancet*, 1937, **2**, 437.

"Pyknolepsy"

Q.—*A girl now aged 6 years began to develop at the age of 3½ years attacks diagnosed as "petit mal." Phemitone and phenobarbitone were of no avail. The child is well developed mentally and physically; there is no family history of epilepsy. What is the prognosis and what treatment is recommended? If the "fits" do not markedly diminish in number on treatment with bromides or the barbiturates, am I justified in labelling the condition pyknolepsy and giving a correspondingly favourable prognosis?*

A.—No, there is no justification in making a diagnosis of pyknolepsy if petit mal in a child does not respond to sedatives. There is no sound evidence at all that pyknolepsy and petit mal are different conditions, and I personally never make the diagnosis of pyknolepsy. In any case, the only distinction advanced to support the existence of two separate diseases is that pyknolepsy invariably has a favourable prognosis; consequently if petit-mal attacks cease they are in retrospect called pyknolepsy. The clinical pattern of the attacks and their electro-encephalographic changes are identical whatever the diagnosis. The case should, therefore, be treated as petit mal, and phenobarbitone, bromides, and even soluble phenytoin tried, alone and in increasing doses, in combination, and with other drugs such as belladonna, until an improvement is obtained.

INCOME TAX

Payments for Dispensing, etc.

"Inquirer" pays £75 a year to his wife for assistance in keeping the books and £52 a year to a part-time dispenser. What is his liability (if any) with regard to the "pay-as-you-earn" procedure?

*** An employer is not required to deduct tax from payments not exceeding £2 a week unless he has received a tax-deduction card for that employee from the income-tax office. If, however, he pays more than £1 a week to a *new* employee he should notify particulars of the payment to the inspector of taxes. The payment of £75 a year to his wife will not affect "Inquirer's" title to the full £140 "married" personal allowance.

Pension to Caretaker

F. W. inquires whether a pension paid to the former caretaker of his surgery of £1 per week is allowable as an expense of carrying on his practice.

*** Yes, such payments are allowable.

Liability as Assistant

H. D. is employed as an outdoor assistant at a salary of £650 plus free board and lodging. His professional expenses, including wear and tear of car, amount to £52, and he pays £16 per annum in life insurance premiums.

*** On these facts the amount of tax payable for the year is roughly £190, leaving a net monthly figure of, say, £38 payable by his principal. The reason for the sharp increase in tax over the previous year's figure is that the additional remuneration he is now receiving carries the full 10s. rate liability.

Casual Earnings of Married Woman

H. M. has, during the past two years, done a certain amount of work for local practitioners. Does she come within the "pay-as-you-earn" system?

*** In our opinion—no. H. M. should claim to have her earnings assessed under Schedule D, and we think that that claim will be admitted. As, however, she is entitled to the 1/10th deduction for earned income and the special allowance of £80 given in respect of a married woman's earnings, no actual liability to tax seems to have arisen so far. It may be advisable for H. M. to explain her circumstances to the local inspector of taxes, so that if the occasion arises she can refer a future employer to the inspector's office for confirmation that tax need not be deducted under "pay as you earn."

Depreciation of Car

R. S. inquires as to the basis on which depreciation should be calculated.

*** The basis is the "written down" cost of the car. For example, suppose that the car cost £300 in 1940 and a claim is to be made for the financial year 1943–4, the amount will be ascertained as follows:

Cost in 1940	£300
Allowance 1941-2	60
	£240
,, 1942-3	48
	£192
,, 1943-4	38

The allowances as shown above are increased by 1/5th; thus the actual allowance for 1943–4 will be £38+£8=£46.

S. C. bought a car in 1938 for £235, second-hand. Allowances have been made for income tax amounting in the aggregate to about £200, leaving the written-down cost at £35. S. C. is advised that the market value of the car is, say, £550. Is any adjustment of the basis of the allowance due in future?

*** No. The basic intention of the depreciation allowance is to give a deduction for the *cost* to the user, spread reasonably over the working life of the car or other "machinery"; it is expressly provided that the aggregate amount of the deductions shall not exceed the actual cost to the person who has had the benefit of the deductions.

LETTERS, NOTES, ETC.

Oxalated Blood for Cell Counts

Dr. MARTIN FOLAN (University College, Cork) writes: In "Any Questions?" of Dec. 2 (p. 744) you reply to an inquiry regarding the use of oxalated blood for cell counts. Admittedly, the use of an empirical amount of oxalate or citrate will lead to many inaccuracies, due to shrinkage of the cells. In the clinical laboratory here we serve a wide provincial field, and for blood counts issue tubes containing the balanced potassium and ammonium oxalate mixture of Wintrobe. (See Whitby and Britton's *Disorders of the Blood*, 1942.) These are designed for 5 c.cm. of blood, *accurately* added, and the whole well mixed by gentle inversion, as frothing results in uneven cell dispersions. Films are provided by the physician in charge of the case, as even this oxalate mixture does not give good cellular morphology in films prepared from it. In my experience this method has given results that agree closely with those prepared at the bedside, and provides a convenient solution to the necessary, though undesirable, practice of sending blood through the post for cell counts. If not more than 12 hours old the specimen may be used for fragility tests provided that the blood is well aerated, as no correction is required for shrinkage.

Rocking Movements in Sleep

Dr. SUSANNA M. HALLIDAY (Cornwall) writes: Rhythmic movements are stated to be normal in a child under 3 in the state between waking and sleeping. Does the writer know whether these movements were common thirty years ago, before it became fashionable systematically to neglect babies? Does he know of a single case occurring in a baby whose mother troubles to go to him when he cries or shows other signs of distress? Is the child who does not show these movements abnormal?

Translation, Please

Dr. MAURICE MCELLIGOTT writes: I should be grateful if any of your linguistic readers would solve the following conundrum. Fifty years ago in Ireland what we call "carbuncle" was quite commonly termed "anthrax" by educated laity. "He has an anthrax on the back of his neck" was a usual expression when speaking of a sufferer from carbuncle. To-day in France the equivalent of our word "anthrax" is *charbon*, and of our "carbuncle," *anthrax*. A recent German medical lexicographer translates *Lumpensammlerskrankheit, Milzbrand, Pestbeule* into the Spanish *carbón*, which seems correct enough. However, he gives for the Spanish *carbunco* the alternative of *Milzbrand* and *Karbunkel*. Hence I would ask a medical linguist better instructed than myself to enlighten me as to the correct Spanish, French, and German terms for the diseases due to *Bacillus anthracis* only.

Hyoscine for Sea-sickness

Capt. J. C. GILBERT, R.A.M.C., writes: Having acted as M.O. on small troopships for the past two years, and in the course of such duties having covered 35,000 miles in Northern waters, waters which, even in summer, are none too kind to the squeamish "tummy," I may perhaps be allowed to record my views on the use of hyoscine both prophylactically and for curative purposes. Hyoscine hyd. gr. 1/100 administered half an hour before sailing, followed by a second dose in four hours and thereafter every six hours, will in 80% of cases prevent sickness and enable meals to be taken. For voyages of over three days' duration the dose can gradually be reduced as the land-lubber gains his sea-legs. For an 8-hour night journey where sleep is permitted one nembutal or hyoscine hyd. gr. 1/100 and phenobarbitone gr. 1½ is ideal. I have seen no harmful effects from hyoscine. A few men have complained of slight dryness of the throat and of slight drowsiness (which complaint I have never heard from a man on duty). In cases where the patient is already sick and has had no treatment gr. 1/75 subcutaneously works wonders, and the dosage can be continued orally; but the really genuine severe cases of travel sickness respond best to hyoscine gr. 1/100 and morphine gr. 1/8 subcutaneously.

Rectal Examination during Labour

Dr. H. A. MURRAY (Exeter) writes: I was interested to read Dr. Bradlow's description of a case of locked twins (Oct. 21, p. 582), primarily because I have always thought rectal examination during labour to be an unsurgical procedure. Despite the lead given by the "mighty" I have never practised this method, and never will. Vaginal examination is much less unpleasant and embarrassing for the patient, and more certain diagnostically. Had Dr. Bradlow done a P.V. sooner he would have diagnosed the condition earlier and saved the patient much suffering. Surgeons always do "clean" cases first and septic ones last, but the obstetrician who examines rectally is deliberately making himself and the field of operation septic. It would be more surgical to plug the anus, and hope it would remain so until after delivery.

Regional Ileitis

Mr. JAMES MORONEY, F.R.C.S. (Liverpool) writes: In reply to a question on this subject in your issue of Dec. 9 (p. 778) you state "The ideal treatment is primary resection. . . ." The vast majority require no operative treatment at all. If obstruction is present the safer and simpler procedure of entero-anastomosis performed through healthy bowel wall is very satisfactory. While I agree that resection may be necessary on occasion, I feel that it is far from "ideal treatment" for the majority.

Headache and "Acute Abdomen"

Dr. T. L. CRAWHALL (Watlington, Oxford) writes: Ever since you published a note on migraine being mistaken for appendicitis, I have wanted to send in this aphorism, which I think is original: "An 'acute abdomen' with a headache is never an acute abdomen!" I do so now because the headache in early pneumonia should distinguish it from an acute abdomen in spite of abdominal pain and rigidity.

Injuries to the Supra-orbital Nerve

Major H. J. STERN, R.A.M.C., writes: The following notes on injuries to the supra-orbital nerve may be of interest. Although the clinical picture has been observed before, not everybody seems to be aware of its existence, so that diagnosis and treatment are frequently delayed. Here is a short description of a typical case. A man had knocked the right side of his forehead against the door of a tank when leaving it. He did not take much notice of this but after a few hours he started to complain of headaches which became so violent that he had to report sick. He was evacuated and admitted to hospital two days later, still suffering from very bad headaches. An *x*-ray of his skull failed to show any bone injury. The possibility of a concussion or a subdural haemorrhage was taken into consideration, but neither these nor other attempted diagnoses were satisfactory. As the patient began to complain of watering of his right eye he was referred to the eye specialist on the fourth day after the injury. He was still complaining of violent headaches on the right side, and there was clearly a hypersecretion of tears in his right eye. There was no disturbance of the eye movements or the pupillary reaction, and the fundi were normal. A very slight but extremely tender swelling in the right eyebrow region was seen, just over the supra-orbital notch. The patient explained that the headaches were "outside" and that he had a peculiar "raw" feeling all over the right side of his scalp. The description and the tenderness over the supra-orbital nerve made the diagnosis of traumatic neuritis of this nerve clear. The old compresses on his forehead which had made his discomfort, if anything, worse, were discontinued, and local application of heat and antineuralgic drugs served to clear up the condition rapidly. The supra-orbital nerve is a branch of the first division (ophthalmic nerve) of the 5th cranial nerve. Another branch is the lacrimal nerve, which supplies the lacrimal gland. This explains the frequent association of watering of the eyes with injuries to the supra-orbital nerve; it is caused by a reflex irritation of the fibres of the lacrimal nerve by the sensory fibres of the supra-orbital nerve. It is interesting to note that in one of the observed cases a symptomatic herpes zoster of the area of distribution of the supra-orbital nerve appeared on the sixth day after the injury. This eruption has to be regarded as due to a secondary involvement of the sensory nerve, not as a result of an infection with herpes virus.

Cracked Fingers

Dr. H. VICKERS (Uxbridge) writes: As a past sufferer from cracked fingers I have read with interest the suggestions put forward in the *Journal* during the last few weeks. I have tried, I think, all the remedies suggested, but there is one remedy which I now use which keeps my hands in good condition. Incidentally I do a lot of gardening and hard work with my hands, and have tried the remedy with complete success during the past five years, even during the severe winter the first year of the war. After washing I rub my hands, nail edges, and the tips of my fingers regularly night and morning, and as often as possible during the day, with a mixture of equal parts of glycerin and lotio rubra; nothing else. A very small quantity is required, but it must be rubbed in carefully. It is much pleasanter than having to wait till a crack appears and then use plasters and other unsightly remedies. The fingers and quicks keep hard and dry and are easily kept under control. I thoroughly recommend this as effective, and, further, if through unforeseen cause a crack should appear, the application, if regularly applied to the crack, promotes a very speedy and not unsightly remedy.

Correction

In the annotation, "Arsenic in the Treatment of Malaria" published in the *Journal* of Jan. 6 (p. 19), the dose of mapharsen (known in this country as mapharside) was by mistake given as 0.4 to 0.6 g. It should have been 0.04 to 0.06 g.